



**MARYLAND DEPARTMENT OF HEALTH
AND MENTAL HYGIENE
EMERGENCY SUPPORT FUNCTION 8:
PANDEMIC INFLUENZA RESPONSE ANNEX**



**Version 7.3
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RECORD OF CHANGES

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INTRODUCTION: An influenza pandemic is unlike any public health emergency or natural disaster. A pandemic will be widespread, with outbreaks expected to occur simultaneously throughout the U.S., thereby preventing the shifting of resources. A pandemic not only causes people throughout the world to become sick and possibly die, but also could cripple countries' economies as millions of people are unable or refuse to go to work. Governments, militaries, and industries could suffer high absenteeism (up to 40%) and productivity could slow to a crawl. The public health and healthcare systems could be overwhelmed by both the ill and the worried well. Furthermore, disruptions are expected to occur for 6 to 8 weeks.

In the U.S., a pandemic could cause 30% of the population to become ill, resulting in 200 thousand to 2 million deaths. Between 300 and 700 thousand people could be hospitalized and over 20 million people would seek outpatient care. Costs could total over \$100 billion.

The following chart shows the historical health impact on Maryland of a moderate and a severe influenza pandemic. Based on historical data, about 30% of the population become sick, half of whom will seek outpatient care for their illness. The number of hospitalizations and deaths vary depending on the virulence of the pandemic virus.

Impact on Maryland of an Influenza Pandemic*		
Health Outcome	30% Attack Rate	
	Moderate Scenario (1968-type)	Severe Scenario (1918-type)
Illness	1,684,471	1,684,471
Outpatient Care	905,687	810,992
Hospitalization	19,640	161,434
Death	4,406	36,218
*Estimates are based on extrapolation from past pandemics in the United States. Note that these estimates do not include the potential impact of interventions not available during the 20 th century pandemics.		

Influenza pandemics are caused by highly contagious forms of influenza that pass first from animals to humans and then easily between humans. Currently, the highly pathogenic avian influenza A (H5N1) is considered a likely cause of a pandemic if it begins to spread more easily between human beings.

Avian influenza A (H5N1) is already considered a public health threat. Since 2004, the World Health Organization (WHO) has reported human cases of avian influenza A (H5N1) in Asia, Africa, the Pacific, Europe and the Near East. Indonesia and Vietnam

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have reported the highest number of H5N1 cases to date. Overall mortality in reported H5N1 cases is approximately 60%. The majority of cases have occurred among children and adults aged less than 40 years old. Mortality was highest in cases aged 10-19 years old—unlike seasonal influenza which generally affects the very young, the very old, and the immuno-compromised.

Studies have documented the most significant risk factors for human H5N1 infection to be direct contact with sick or dead poultry or wild birds, or visiting a live poultry market. Most human H5N1 cases have been hospitalized late in their illness with severe respiratory disease. A small number of clinically mild H5N1 cases have been reported. Despite the high mortality, human cases of H5N1 remain rare to date.

In anticipation of a possible change in the H5N1 virus, or any other virus that would cause an influenza pandemic, the Maryland Department of Health and Mental Hygiene has developed this annex to the Maryland DHMH ESF 8: Health and Medical Operational Plan and builds on the Health and Medical Operations Plan (HMOP) and the Functional Annex for ESF 8 Response. In addition, some functional areas critical to Pandemic Influenza Response will be expanded upon in other annexes, such as the Community Containment Annex. As such, this plan will refer to the HMOP and other documents rather than duplicate materials. In addition, some sensitive information will be incorporated in those versions for official use only but will not be disclosed to the public due to safety and security precautions.

This document is an update to the Pandemic Influenza Plan for Maryland, version 6. It incorporates new guidance from the United States Federal Government and the World Health Organization. In particular, this Plan is based on the following documents:

- U.S. National Strategy for Pandemic Influenza
- Pandemic Influenza Implementation Plan for the National Strategy
- Health and Human Services Pandemic Influenza Plan
- National Incident Management System
- National Response Plan

It also provides guidance in ten public health functional areas in accordance with *Part 2: Public Health Guidance for State and Local Partners* from the *HHS Pandemic Influenza Plan*. Within each functional area, activities by the state and local health departments are described by pandemic phase.

This Plan is a living document; it will be updated as appropriate to reflect changes in the threat of pandemic influenza and the state of relevant response capabilities and technologies.

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PURPOSE: To provide operational guidance for DHMH and other supporting agencies and partners in the event of an Influenza Pandemic.

GOALS: Maryland's Goals correspond to those of the *U.S. National Strategy for Pandemic Influenza, November 2005*:

- Stopping, slowing or otherwise limiting the spread of a pandemic to the State;
- Limiting the spread of a pandemic, and mitigating disease, suffering and death;
- Sustaining infrastructure and mitigating impact to the economy and the functioning of society.

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OBJECTIVES: The state of Maryland will achieve these goals through the following objectives from the guidance to *State and Localities* in the *U.S. National Strategy for Pandemic Influenza, November 2005*:

- Ensure that all reasonable measures are taken to limit the spread of an outbreak within the State's borders;
- Establish comprehensive and credible preparedness and response plans that are exercised on a regular basis;
- Integrate non-health entities in planning for a pandemic, including law enforcement, utilities, political leadership, businesses, schools, and others;
- Establish state and local stockpiles of supplies and distribution systems to support a pandemic response;
- Identify key spokespersons and ensure a coordinated crisis communications plans;
- Provide public education campaigns on pandemic influenza and public and private interventions.

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ASSUMPTIONS: The Pandemic Influenza Plan for Maryland is based on the following assumptions from the *HHS Draft Guidance on Prioritization of Pandemic Influenza Vaccine, October 2007*, *U.S. National Strategy for Pandemic Influenza Implementation Plan, May 2006*, and the *HHS Pandemic Influenza Implementation Plan, November 2005*:

- Susceptibility to the pandemic influenza virus will be universal.
- Efficient and sustained person-to-person transmission signals an imminent pandemic.
- The clinical disease attack rate will be 30 percent in the overall population during the pandemic. Illness rates will be highest among school-aged children (about 40 percent) and decline with age. Among working adults, an average of 20 percent will become ill during a community outbreak.
- Some persons will become infected but not develop clinically significant symptoms. Asymptomatic or minimally symptomatic individuals can transmit infection and develop immunity to subsequent infection.
- While the number of patients seeking medical care cannot be predicted with certainty, in previous pandemics about half of those who became ill sought care. With the availability of effective antiviral medications for treatment, this proportion may be higher in the next pandemic.
- It is unclear how long it will take for a pandemic to spread from overseas to the United States
 - Mathematical modeling predicts ~55 days to first U.S. case and 80– 120 days from first case to peak of first wave
 - Substantial uncertainty
 - Wide range around point estimates
 - Unknown where a pandemic will start
 - Potential impact of seasonality
- It is unclear how large a vaccine supply will be available to the United States
 - Depends on U.S.-based capacity when a pandemic occurs
 - Depends on antigen concentration per dose
 - For H5N1 vaccines, antigen concentration in clinical trials ranged from 3.8 ug to 90 ug depending on formulation
- Rates of serious illness, hospitalization, and deaths will depend on the virulence of the pandemic virus and differ by an order of magnitude between more and less

severe scenarios. Risk groups for severe and fatal infection cannot be predicted

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with certainty but are likely to include infants, the elderly, pregnant women, and persons with chronic or immunosuppressive medical conditions.

- Rates of absenteeism will depend on the severity of the pandemic. In a severe pandemic, absenteeism attributable to illness, the need to care for ill family members, and fear of infection may reach 40 percent during the peak weeks of a community outbreak, with lower rates of absenteeism during the weeks before and after the peak. Certain public health measures (closing schools, quarantining household contacts of infected individuals, “snow days”) are likely to increase rates of absenteeism.
- The typical incubation period (interval between infection and onset of symptoms) for influenza is approximately 2 days.
- Persons who become ill may shed virus and can transmit infection for one-half to one day before the onset of illness. Viral shedding and the risk of transmission will be greatest during the first 2 days of illness. Children will play a major role in transmission of infection as their illness rates are likely to be higher, they shed more virus over a longer period of time, and they control their secretions less well.
- On average, infected persons will transmit infection to approximately two other people.
- Epidemics will last 6 to 8 weeks in affected communities.
- Multiple waves (periods during which community outbreaks occur across the country) of illness are likely to occur with each wave lasting 2 to 3 months. Historically, the largest waves have occurred in the fall and winter, but the seasonality of a pandemic cannot be predicted with certainty.

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COMMUNITY CONTAINMENT

Overview

This section describes how the Maryland State Department of Health and Mental Hygiene (DHMH) has developed and will maintain plans and relationships to prepare the community for a pandemic.

Pandemic Preparedness Coordinating Committee

DHMH has established a Pandemic Preparedness Coordinating Committee to ensure that all stakeholders are involved in the preparation process and the execution of the plan. Additionally, this committee ensures that the plans for Maryland's Pandemic Influenza Response are integrated with other State, regional, and local plans and is supported by formal agreements.

Local Health Departments (LHDs) have established their own committees to involve supporting agencies like law enforcement and stakeholders like healthcare systems at the community (local and regional) level. This also promotes a community based, integrated response that supports both public health and healthcare organizations.

Critical Elements of this Functional Annex for Pandemic Influenza Response

This plan delineates which activities will be performed at State and local levels, and compliments those roles and responsibilities for supporting agencies that are described in the *DHMH Functional Annex for ESF 8 Response*. Of particular note is the role of state and local law enforcement personnel. A pandemic influenza response—especially maintaining public order and implementing control measures--cannot be successful without the support of law enforcement (see the separate *Community Containment Annex*).

A pandemic influenza response will be conducted in accordance with the Concept of Operations, legal authorities, and ICS Management Structure as defined in the *DHMH ESF 8: Health and Medical Operational Plan and Appendices*. As that plan describes (in the Tiered Response discussion in the Concept of Operations), a public health emergency will be declared and public health plans and responses will be activated at the lowest community based level possible.

LHDs and the DHMH will declare public health emergencies and initiate a response during a Tier 1 or Tier 2 response. During a Tier 3, 4, 5 or 6 Response, the Governor or the Secretary of the Department of Health and Mental Hygiene may activate all or part of the *DHMH Emergency Support Function 8: Health and Medical Operational Plan (ESF 8 Plan)* as well as other State emergency management plans. During all tiers, requests for state and federal resources must go from the LHDs through DHMH to the MEMA and Governor's Office.

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This plan accounts for the diverse demographic profile of Maryland, to include its special needs populations and language minorities. The needs of those populations and the psychosocial needs of the state are addressed throughout the plan and its accompanying annexes, particularly sections and annexes about Community Containment and Mass Vaccination and Prophylaxis.

The Public Health Communications section of this annex and the Concept of Operations of the *DHMH ESF 8: Health and Medical Operations Plan* address the development and testing of communication plans that reach various audiences via various media, spokespersons, and networks.

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WHO PANDEMIC PHASES AND US FEDERAL RESPONSE STAGES:

This version of the DHMH Pandemic Flu Plan includes the US Federal Response Phases. These were developed to correspond with the World Health Organization pandemic phases and to reflect how a global status is relevant to the United States.

Using these guidelines assists DHMH to decide when to take corresponding actions, if any. At the time this document was drafted, we are in WHO Phase 3 and Federal Government Response Stage 0. DHMH is in a planning status.

Table 1 below illustrates the phase and stage names and the criteria for each.

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TABLE 1: PANDEMIC PHASES AND STAGES		
Interpandemic Period	WHO Phase 1: No new influenza virus subtypes in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered low.	FEDERAL GOVERNMENT RESPONSE STAGE O: New domestic animal outbreak in at-risk country.
	WHO Phase 2: No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.	
Pandemic Alert Period	WHO Phase 3: Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.	FEDERAL GOVERNMENT RESPONSE STAGE O: New domestic animal outbreak in at-risk country; AND FEDERAL GOVERNMENT RESPONSE STAGE 1: Suspected human outbreak overseas.
	WHO Phase 4: Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.	FEDERAL GOVERNMENT RESPONSE STAGE 2: Confirmed human outbreak overseas.
	WHO Phase 5: Larger cluster(s) but human-to-human spread is still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).	
Pandemic Period	WHO Phase 6: Pandemic phase; increased and sustained transmission in general population.	FEDERAL GOVERNMENT RESPONSE STAGE 3: Widespread human outbreaks in multiple locations overseas.
		FEDERAL GOVERNMENT RESPONSE STAGE 4: First human case in North America.
		FEDERAL GOVERNMENT RESPONSE STAGE 5: Spread throughout the United States.
		FEDERAL GOVERNMENT RESPONSE STAGE 6: Recovery and preparation for subsequent waves.

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PANDEMIC SEVERITY INDEX:

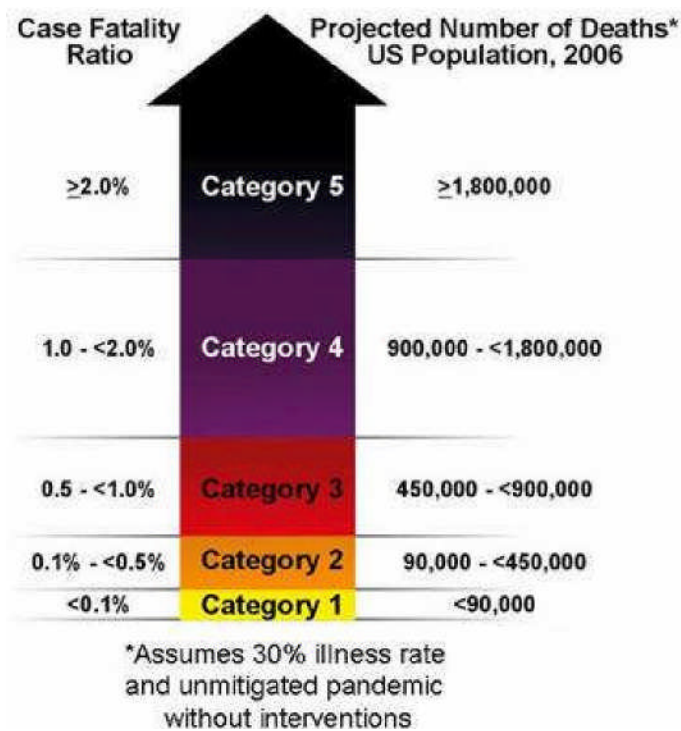
This version of the DHMH Pandemic Influenza Plan reflects the new pandemic planning tool called the Pandemic Severity Index. This tool was developed by the CDC in order to assist State and Local Health Departments in planning and response. This tool helps DHMH to match plans to projected severity and to trigger public health emergency intervention and actions to the severity of the pandemic even more specifically than the WHO Phases and US Government Stages.

National:

Based on the US Pandemic Severity Index which assumes a 30 percent illness rate, a pandemic that has a case fatality ratio of less than 0.1 percent and causes less than 90,000 deaths would be a Category 1 pandemic. A Category 2 pandemic would have a 0.1 percent to 0.5 percent case fatality ratio and cause between 90,000 and 450,000 deaths. A pandemic that has a 0.5 percent to 1.0 percent case fatality ratio and causes between 450,000 and 900,000 deaths would be a Category 3 pandemic. With a case fatality ratio of between 1.0 percent and 2.0 percent, a pandemic that causes 900,000 to 1,800,000 deaths would be a Category 4 pandemic. The most severe pandemic in the Pandemic Severity Index is a Category 5 pandemic that has a case fatality ratio of greater than 2.0 percent and causes over 1,800,000 deaths in the US.

Table 2, below, depicts how the Case Fatality Ratio relates to the Projected Number of Deaths across the US population. Table 3 depicts the triggers for the implementation of mitigation strategies by Pandemic Severity Index and US Government Stages based on CDC guidance. Table 4 depicts the Pandemic Severity Index by Epidemiological Characteristics.

Table 2: Pandemic Severity Index



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Table 3: Triggers for Implementation of Mitigation Strategies by Pandemic Severity Index and U.S. Government Stages

Pandemic Severity Index	WHO Phase 6, U.S. Government Stage 3*	WHO Phase 6, U.S. Government Stage 4† and First human case in United States	WHO Phase 6, U.S. Government Stage 5§ and First laboratory-confirmed cluster in State or region¶
1	Alert	Standby	Activate
2 and 3	Alert	Standby	Activate
4 and 5	Standby**	Standby/Activate ††	Activate

Alert: Notification of critical systems and personnel of their impending activation.

Standby: Initiate decision-making processes for imminent activation, including mobilization of resources and personnel.

Activate: Implementation of the community mitigation strategy.

*Widespread human outbreaks in multiple locations overseas.

†First human case in North America.

§ Spread throughout the United States.

¶Recommendations for regional planning acknowledge the tight linkages that may exist between cities and metropolitan areas that are not encompassed within state boundaries.

**Standby applies. However, Alert actions for Category 4 and 5 should occur during WHO Phase 5, which corresponds to U.S. Government Stage 2.

††Standby/Activate Standby applies unless the laboratory-confirmed case cluster and community transmission occurs within a given jurisdiction, in which case that jurisdiction should proceed directly to Activate community interventions defined in Table 2.

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Table 4: Pandemic Severity Index by Epidemiologic Characteristics

Characteristics	Pandemic Severity Index				
	Category 1	Category 2	Category 3	Category 4	Category 5
Case Fatality Ratio (percentage)	<0.1	0.1 - <0.5	0.5 - <1.0	1.0 - <2.0	≥ 2.0
Excess Death Rate (per 100,000)	<30	30 - <150	150 - <300	300 - <600	≥600
Illness Rate (percentage of the population)	20 - 40	20 - 40	20 - 40	20 - 40	20 - 40
Potential Number of Deaths (based on 2006 U.S. population)	<90,000	90,000- <450,000	450,000- <900,000	900,000- <1.8 million	≥1.8 million
20 th Century U.S. Experience	Seasonal Influenza (Illness rate 5-20%)	1957, 1968 Pandemic	None	None	1918 Pandemic

The Maryland DHMH will use the Severity Index to develop plans and a timely, focused, and multi-faceted response to Pandemic Influenza. This index is of particular use when DHMH is planning community mitigation strategies. For example, as illustrated in the table below, if the Pandemic Severity is a 4 or 5, social distancing tactics are recommended rather than just considered. If the severity were just a Category 1, social distancing would not be recommended.

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Table 5: Summary of the Community Mitigation Strategy by Pandemic Severity

Interventions* by Setting	Pandemic Severity Index		
	1	2 and 3	4 and 5
Home			
Voluntary isolation of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	Recommend †§	Recommend †§	Recommend †§
Voluntary quarantine of household members in homes with ill persons ¶ (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Generally not recommended	Consider **	Recommend **
School			
Child social distancing			
-dismissal of students from schools and school based activities, and closure of child care programs	Generally not recommended	Consider: ≤4 weeks ††	Recommend: ≤12 weeks §§
-reduce out-of school social contacts and community mixing	Generally not recommended	Consider: ≤4 weeks ††	Recommend: ≤12 weeks §§
Workplace / Community			
Adult social distancing			
-decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)	Generally not recommended	Consider	Recommend
-increase distance between persons (e.g., reduce density in public transit, workplace)	Generally not recommended	Consider	Recommend
-modify, postpone, or cancel selected public gatherings to promote social distance (e.g., stadium events, theater performances)	Generally not recommended	Consider	Recommend
-modify work place schedules and practices (e.g., telework, staggered shifts)	Generally not recommended	Consider	Recommend

Generally Not Recommended = Unless there is a compelling rationale for specific populations or jurisdictions, measures are generally not recommended for entire populations as the consequences may outweigh the benefits.

Consider = Important to consider these alternatives as part of a prudent planning strategy, considering characteristics of the pandemic, such as age-specific illness rate, geographic distribution, and the magnitude of adverse consequences. These factors may vary globally, nationally, and locally.

Recommended = Generally recommended as an important component of the planning strategy.

*All these interventions should be used in combination with other infection control measures, including hand hygiene, cough etiquette, and personal protective equipment such as face masks. Additional information on infection control measures is available at www.pandemicflu.gov.

†This intervention may be combined with the treatment of sick individuals using antiviral medications and with vaccine campaigns, if supplies are available

§Many sick individuals who are not critically ill may be managed safely at home

¶The contribution made by contact with asymptotically infected individuals to disease transmission is unclear. Household members in homes with ill persons may be at increased risk of contracting pandemic disease from an ill household member. These household members may have asymptomatic illness and may be able to shed influenza virus that promotes community disease transmission. Therefore, household members of homes with sick individuals would be advised to stay home.

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**To facilitate compliance and decrease risk of household transmission, this intervention may be combined with provision of antiviral medications to household contacts, depending on drug availability, feasibility of distribution, and effectiveness; policy recommendations for antiviral prophylaxis are addressed in a separate guidance document.

††Consider short-term implementation of this measure—that is, less than 4 weeks.

§§Plan for prolonged implementation of this measure—that is, 1 to 3 months; actual duration may vary depending on transmission in the community as the pandemic wave is expected to last 6-8 weeks.

When used in concert with the WHO Phases and US Government Stages, the Pandemic Severity Index can help DHMH determine when to trigger public health actions like community containment strategies:

More information about the concepts behind the Pandemic Severity Index are in the “Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States” published by the CDC in February 2007 (http://www.pandemicflu.gov/plan/community/community_mitigation.pdf). For more information on how DHMH will employ the Severity Index, see the Community Containment/Mitigation section in this plan and in the separate *Community Containment Annex*.

Maryland:

The Pandemic Severity Index developed by the CDC for estimates of deaths in the US due to a pandemic with various levels of severity was adapted for Maryland to assist in pandemic influenza planning efforts. Based on the Pandemic Severity Index adapted for Maryland, which also assumes a 30 percent illness rate, a pandemic that causes less than 1,684 deaths in Maryland would be considered a **Category 1** pandemic. A **Category 2** pandemic would cause between 1,684 and 8,422 deaths in the Maryland population. A **Category 3** pandemic in Maryland would cause between 8,422 and 16,845 deaths. In Maryland, a pandemic that causes 16,845 to 33,689 deaths would be a **Category 4** pandemic. The most severe pandemic in the Pandemic Severity Index adapted for Maryland is a **Category 5** pandemic that causes over 33,689 deaths in Maryland.

The Pandemic Severity Index was also adapted for each county in Maryland for further preparedness efforts. Using the projected severity of pandemic influenza for each county in Maryland will allow the state to better plan for an influenza pandemic and assist the state in developing triggers for public health interventions across Maryland.

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Table 6: Pandemic Influenza Severity Index, Based on 30% Attack Rate, Adapted for Maryland - DRAFT

Jurisdiction	Population	Epidemiological Characteristics				
		Category 1	Category 2	Category 3	Category 4	Category 5
		Case Fatality Ratio				
		<0.1%	0.1% - <0.5%	0.5% - <1.0%	1.0% - <2.0%	>2.0%
MARYLAND Allegany	5,614,906 72,832	<1684 <22	1684-<8422 22-<109	8422-<16845 109-<218	16845-<33689 218-<437	>33689 >437
AnneArundel	509,300	<153	153-<764	764-<1528	1528-<3056	>3056
Baltimore	787,384	<236	236-<1181	1181-<2362	2362-<4724	>4724
Baltimore City	631,367	<189	189-<947	947-<1894	1894-<3788	>3788
Calvert	88,893	<27	27-<133	133-<267	267-<533	>533
Caroline	32,617	<10	10-<49	49-<98	98 -<196	>196
Carroll	170,260	<51	51-<255	255-<511	511 -<1022	>1022
Cecil	99,905	<30	30-<150	150-<300	300-<599	>599
Charles	138,822	<42	42-<208	208-<416	416-<833	>833
Dorchester	31,631	<9	9-<47	47-<95	95 -<190	>190
Frederick	223,830	<67	67-<336	336-<671	671 -<1343	>1343
Garrett	29,859	<9	9-<45	45-<90	90 -<179	>179
Harford	241,402	<72	72-<362	362-<724	724 -<1448	>1448
Howard	271,362	<81	81-<407	407-<814	814-<1628	>1628
Kent	20,023	<6	6-<30	30-<60	60-<120	>120
Montgomery	932,132	<280	280-<1398	1398-<2796	2796-<5593	>5593
PrinceGeorge's	841,315	<252	252-<1262	1262-<2524	2524-<5048	>5048
QueenAnne's	46,232	<14	14-<69	69-<139	139-<277	>277
Somerset	25,773	<8	8-<39	39-<77	77 -<155	>155
St.Mary's	99,151	<30	30-<149	149-<297	297-<595	>595
Talbot	36,062	<11	11-<54	54-<108	108-<216	>216
Washington	143,748	<43	43 -<216	216 -<431	431 -<862	>862
Wicomico	91,987	<28	28-<138	138-<276	276-<552	>552
Worcester	49,013	<15	15-<74	74-<147	147-<294	>294

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ROLES AND RESPONSIBILITIES

During an influenza pandemic, DHMH will act as the overall lead agency for ESF 8 Health and Medical Services. In this capacity, DHMH will coordinate the provision of emergency response (e.g., pre-hospital, hospital, and other) at the state level during a pandemic. Roles and responsibilities for DHMH and supporting agencies are described in the *DHMH Functional Annex for ESF 8 Response*.

DHMH will address the public health ramifications associated with the pandemic including the restoration of public health functions, defining the epidemiology of the pandemic, the administration of vaccinations and antiviral agents, among other public health issues.

DHMH will follow the Concept of Operations described in the *ESF 8: Health and Medical Operations Plan* and *Functional Annex for ESF 8 Response*. For example, as warranted by the pandemic threat and phase, DHMH will establish a Departmental Emergency Command Center.

DHMH will also ensure that they employ those techniques described in their *Continuity of Operations Plan*. See the Concept of Operations section of the *ESF 8: Health and Medical Operations Plan* for more information.

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ACTIVITIES BY PANDEMIC PERIOD

STATE HEALTH DEPARTMENT:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Develop materials and help educate healthcare providers about novel and pandemic influenza.
- ☐ Provide consultation to LHDs and healthcare providers, as needed, on suspect novel influenza cases.
- ☐ Develop and provide updated surveillance information and materials to LHDs, such as a user friendly standardized surveillance questionnaire form.
- ☐ In conjunction with the Office of the Chief Medical Examiner (OCME), develop a mechanism for receiving timely information on avian influenza related causes of death if needed for epidemiological investigation.
- ☐ Continue to recruit medical providers to participate in the CDC Influenza Sentinel Provider Network.
- ☐ Maintain current influenza surveillance systems to monitor morbidity and mortality.
- ☐ Isolate and subtype influenza viruses all year round.
- ☐ Improve capacity for rapid identification of unusual influenza strains.
- ☐ Identify critical resources for epidemiologic surge capacity to include personnel needed to assist with epidemiological investigations.
- ☐ Establish and maintain (update) contact lists, including other agencies involved in non-human animal disease control (e.g., MDA, DNR, USDA state offices).
- ☐ Continue routine sample testing for influenza and subtype, as appropriate.
- ☐ Send unusual or suspected cases of novel influenza virus to CDC Reference Laboratory for confirmatory and special tests.
- ☐ Ensure that primers are available to sub-type all influenza A viruses.
- ☐ Ensure that sufficient quantities of all diagnostic reagents are available for the laboratory's needs.

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Develop a reporting system for hospitals to report daily aggregate data on the number of suspected and confirmed influenza-associated deaths. It is anticipated that this will be the primary method to collect daily data necessary to monitor the mortality of the pandemic.

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Update LHDs and providers regularly throughout the influenza pandemic.
- ☐ Work with LHDs to coordinate testing.
- ☐ Work with LHDs to investigate and report special pandemic situations.
- ☐ Analyze surveillance data to monitor trends in influenza activity.
- ☐ Implement enhanced surveillance for detection of the first cases.
- ☐ Send unusual or suspected cases of novel influenza virus to CDC Reference Laboratory for confirmatory and special tests.
- ☐ Increase surveillance and laboratory activities and testing as needed and share analysis results with key stakeholders.
- ☐ Implement enhanced disease surveillance at points of entry to Maryland if an influenza pandemic begins outside the United States.
- ☐ Communicate to all partners the heightened need for timely and complete surveillance data.
- ☐ Provide mortality data to CDC as needed to help guide national response measures.
- ☐ Participate in national and international surveillance activities as indicated.

Augment and scale back surveillance when appropriate. Enhanced surveillance will be conducted during the introduction, initial spread, and first waves of a pandemic. Over time, as more persons are exposed, the pandemic strain is likely to become a routinely circulating influenza A subtype. When that happens, the activities of Maryland's influenza surveillance system may revert to the frequency and intensity typically seen during interpandemic influenza seasons. The return to interpandemic surveillance will occur as soon as feasible, and the change will be communicated to all surveillance partners.

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LOCAL HEALTH DEPARTMENTS:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Help educate healthcare providers about novel and pandemic influenza.
- ☐ Distribute to healthcare providers the current CDC recommendations for enhanced surveillance for the detection of the first cases of the pandemic virus in their jurisdictions.
- ☐ Provide consultation and investigation of suspected novel influenza cases to healthcare providers in conjunction with the state health department.
- ☐ Consult on collection of specimens of suspected novel influenza testing.
- ☐ Identify sentinel providers for test kits.
- ☐ Facilitate the transfer of specimens to the DHMH State Laboratory.
- ☐ Conduct follow-up of suspected novel influenza cases, including contact investigations.
- ☐ Identify critical resources for epidemiologic surge capacity.
- ☐ Establish and maintain (update) contact lists.
- ☐ Investigate community outbreaks of influenza-like illness.
- ☐ Assist with identifying medical providers willing to participate in the CDC Influenza Sentinel Provider Network

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Update providers regularly throughout the influenza pandemic.
- ☐ Provide or facilitate testing and investigation of pandemic influenza cases.
- ☐ Work with DHMH to investigate and report special pandemic situations.
- ☐ Conduct enhanced surveillance activities.
- ☐ Communicate to all partners the heightened need for timely and complete surveillance data.

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HEALTHCARE PLANNING

I. Overview

Pandemic influenza differs from many biological threats in its potential magnitude and duration, including the likelihood of second and later waves of disease. Several features set pandemic influenza apart from other public health emergencies or community disasters:

- ☐ Outbreaks can be expected to occur simultaneously throughout much of the U.S., precluding the sharing of human and material resources that usually occur in the response to other disasters. Localities should be prepared to rely on their own resources to respond as much as possible. The effect of pandemic influenza on individual communities will be relatively prolonged (weeks to months) in comparison to disasters of shorter duration.
- ☐ Because of widespread susceptibility to a pandemic influenza strain, the number of persons sickened will be high (approximately 30%).
- ☐ Health care workers and other first responders will be at higher risk of exposure and illness than the general population, further straining the health care system.
- ☐ Effective preventive and therapeutic measures, including vaccine and antiviral agents, are likely to be delayed, in short supply and may not be effective.
- ☐ Widespread illness in the community could result in sudden and potentially significant shortages of personnel in other sectors that provide critical public safety services.

A pandemic will likely overwhelm the current healthcare system, particularly a Category 4 or 5 on the Pandemic Severity Index. The increase in patients requiring hospitalization and critical care will result in shortages of multiple resources including personnel and equipment. This will, in turn, create a situation where nursing homes and homecare agencies may face more clinically complex hospital discharges and will have to care for patients they would normally discharge to the hospital. Community Health Centers and other primary care providers will need to expand their triage and outpatient treatment capacity to relieve pressure from hospital emergency departments. All facilities will need to supplement their highly trained professional staff with volunteers and lesser trained staff. Standards of care and the current regulatory approach will, by necessity, need to be changed.

During the Federal Government Response Stage 0 (WHO Inter-Pandemic Period), emphasis will be centered upon developing institutional plans, protocols and exercises for responding to influenza pandemic. Health care facilities included in the planning will be

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hospitals, primary care centers, emergency medical services, home health agencies and long term care facilities.

II. Hospital Planning during Federal Stages 0-2 (WHO Inter-Pandemic and Pandemic Alert Periods)

Each hospital must develop a plan for response to an influenza pandemic. This plan should be developed by an interdisciplinary team and it should be well integrated and coordinated with the facility's plan to address smallpox and other communicable diseases. The elements of a hospital influenza plan are listed in the Hospital Preparedness checklist provided at www.PandemicFlu.gov.

A. Communications

A well-conceived internal and external communication plan is extremely important during a pandemic. The infrastructure for communication should follow the Incident Command System.

B. Education and Training

Each hospital should develop an education and training plan that addresses the needs of staff, patients, family members, and visitors. Hospitals should assign responsibility for coordination of the pandemic influenza education and training program and identify training materials—in different languages and at different reading levels, as needed—from HHS agencies, state and local health departments, and professional associations.

C. Occupational Health

Maintaining an adequate level of competent healthcare staff will be a major challenge during a pandemic. The healthcare workforce will be stressed physically and psychologically. Like others in the community, many healthcare workers will become ill. Healthcare facilities must be prepared to: 1) protect healthy workers from exposures in the healthcare setting through the use of recommended infection control measures; 2) evaluate and manage symptomatic and ill healthcare personnel; 3) distribute and administer antiviral drugs and/or vaccines to healthcare personnel, as recommended by HHS and DHMH; and 4) provide psychosocial services to health care workers and their families to help sustain the workforce.

To achieve these ends, healthcare facilities must establish systems to effectively screen workers for respiratory symptoms; reinforce proper use of PPE (Functional Area 4: Infection Control), hand hygiene and other infection control measures; review time-off policies and have a plan for reassignment of high-risk personnel (e.g., pregnant women, immuno-compromised staff) to low risk duties; promote annual influenza vaccination; and develop a plan to rapidly administer vaccine and antivirals should they become available.

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The provision of mental health/psycho-social support to workers is especially important during a pandemic. Healthcare workers will be under constant stress due to their increased risk of contracting influenza, the likely inordinate increase in the number of patient deaths, and the possible alteration of standards of patient care necessitated by the pandemic. In addition, staff may experience the stress of ill persons at home or recent death of a family member and/ or friend. The necessity of working while wearing PPE and the possibility of quarantine can also take a toll.

Healthcare facilities must ensure that plans are made to meet workers' physical needs at work (e.g., food and housing, rest and recuperation including breaks from PPE and patient care) and provide emotional support and counseling. Hospitals should have a system in place for documenting influenza vaccination of healthcare personnel.

D. Use and Administration of Vaccines and Antiviral Drugs

Pandemic influenza vaccine and “pre-pandemic” influenza vaccine

Once the characteristics of a new pandemic influenza virus are identified, the development of a pandemic vaccine will begin. Recognizing that there may be benefits to immunization with a vaccine prepared before the pandemic against an influenza virus of the same subtype, efforts are underway to stockpile vaccines for subtypes with pandemic potential. As supplies of these vaccines become available, it is possible that some healthcare personnel and other persons critical to a pandemic response will be recommended for vaccination to provide partial protection or immunological priming for a pandemic strain. Antiviral medications may be effective for a particular virus in a pandemic. Hospitals and practitioners should keep abreast of recommendations from CDC and DHMH on use for treatment vs. prophylaxis (see Section 5, Vaccine and Antiviral Procurement, Distribution and Use).

E. Facility Access and Security

Hospitals should determine in advance what criteria and procedures they will use to limit non-patient access to the facility if pandemic influenza spreads through the community. Any variation from normal hospital access should be communicated to patients, staff and visitors.

Hospitals should develop criteria or thresholds for temporary closure of the hospital to new admissions and transfers. The criteria should consider staffing ratios, isolation capacity, and risks to non-influenza patients. As part of this effort, hospital administrators should determine who in the hospital will make the request for temporary closings.

Hospitals should have a plan for security including:

- ☐ Assessment of building for security/access risks.
- ☐ A defined method of identification of staff and visitors.
- ☐ A plan for enforcement of hospital access by hospital security services.

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- Local law enforcement should be informed of the plan, however; they might be overburdened during a pandemic and therefore will have limited ability to assist healthcare facilities with security services.
- Healthcare facilities should plan for additional security. This may be required given the increased demand for services, the possibility of long wait times for care and because triage or treatment decisions may not be in agreement with patient or family expectations.

F. Hospital Triage and Clinical Evaluation

During a pandemic, hospital emergency departments and outpatient departments may be overwhelmed with patients seeking care. Therefore, hospitals must review current procedures for clinical evaluation and admission in order to make them as efficient as possible, thereby reducing the number of patient encounters.

They must develop efficient systems to: 1) identify patients with pandemic influenza versus the worried well; 2) physically separate suspect influenza patients from other patients during waiting and triage to reduce risk of disease transmission; and 3) determine whether hospitalization is required. Hospitals should plan to assign a triage coordinator to manage patient flow.

The adherence to proper infection control standards must be reinforced as well. Hospitals should also develop plans to enhance their capacity to triage. A hospital may choose to surge their triage capacity by using on-campus sites (e.g., additional outpatient clinics, temporary shelters) or off-campus at extension clinic sites in order to protect the staff, patients, and facility from being overwhelmed and/or contaminated.

The success of a hospital's efforts to divert triage away from its Emergency Department to other sites will be dependent upon the effective use of public service announcements that explain the rationale to the community.

G. Hospital Surge Capacity

Pandemic influenza will create demands for healthcare resources that greatly exceed normal capacity. Healthcare facilities must plan ahead to address emergency staffing needs and increased demand for isolation, ICUs, assisted ventilation services and consumable and durable medical supplies. Hospital planners can use FluSurge software (<http://www.cdc.gov/flu/flusurge.htm>) to estimate the potential impact of a pandemic on resources such as staffed beds (both overall and ICU) and ventilators and then develop strategies to allocate these resources. Additional guidance may be obtained from the Health and Medical Surge Capacity and Capability Annex.

In the event of a massive pandemic where there are not enough human or material assets (e.g., nursing, ventilators, nutrition, hydration) available to meet patient needs, decisions to alter the standard of care will need to be made in an effort to provide the best possible outcome to the greatest number of patients.

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Staffing

A major concern during an influenza pandemic will be the shortage of nurses and other healthcare personnel. This lack of healthcare personnel will limit the ability of a hospital to handle increased surge capacity.

Identification of sources of back-up personnel is of paramount importance given the likelihood of increased demands on the system posed by the pandemic, coupled with concurrent reduction in the work force due to illness, absenteeism, and exhaustion.

Healthcare facilities should take the following steps to attempt to address projected staffing shortages:

- Assign responsibility for the assessment and coordination of staffing during an emergency and ensure call-down lists (phone tree) are updated and procedures are current.
- Estimate the minimum number and categories of personnel needed to care for a cohort of influenza patients per day/shift and use to project staffing needs;
- Develop strategies to enhance staffing to required levels including:
 - ☐ reassign non-clinical staff to clinical and clinical support functions;
 - ☐ recruit retired healthcare personnel;
 - ☐ utilize healthcare students (e.g., medical and nursing students) and family members of patients where feasible; and
 - ☐ develop Mutual Aid Agreements or Memoranda of Understanding/Agreement with other healthcare facilities.
- Increase cross-training of personnel to provide support for essential patient-care areas at times of severe staffing shortages (e.g. in emergency departments, ICUs, or medical units).
- Create a list of essential-support personnel titles (e.g. environmental and engineering services, nutrition and food services, administrative, clerical, medical records, information technology, laboratory) that are needed to maintain hospital operations.
- Create a list of non-essential positions that can be re-assigned to support critical hospital services or placed on administrative leave to limit the number of persons in the hospital.
- Identify the credentialing requirements and insurance and liability concerns related to using non-facility staff.
- Consult with the state health department on plans for rapidly credentialing healthcare professionals during a pandemic. This might include defining when an “emergency staffing crisis” can be declared and identifying emergency laws that allow employment of healthcare personnel with out-of-state licenses.

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Bed capacity

The following actions should be taken:

- Review and revise admissions and discharge criteria for times when bed capacity is critically short.
- Identify areas of the facility that could be vacated for use in cohorting of influenza patients and developing cohort protocols.
- Work with home healthcare agencies to arrange at-home follow-up care for patients who have been discharged early and for those whose admission was deferred because of limited bed space.
- Hospitals in a region should plan and work together to provide support and backup and to transfer patients when either capacity or capability of a facility is exceeded.
- Review and refine the criteria hospitals currently use for temporarily canceling elective surgical procedures during surge periods. Plans should also be made for determining what and where emergency procedures will be performed during a pandemic.
- Develop policies and procedures for moving patients (e.g., cohorting) between nursing units in order to obtain optimal utilization of resources (staff).
- Develop policies and procedures for expediting the discharge of patients who do not require ongoing inpatient care (e.g., develop plans and policies for transporting discharged patients home or to other facilities; create a patient discharge holding area or discharge lounge to free up bed space).
- Discuss with local and state health departments how bed availability, including available ICU beds and ventilators, will be tracked during a pandemic.
- Identify permanent and temporary beds in controlled environments.
- Identify locations for infectious patients that will prevent exposure of other, non-infectious patients.
- Consult with hospital licensing agencies on plans and processes to expand bed capacity during times of crisis. These efforts should take into account the need to provide staff and medical equipment and supplies to care for the occupant of each additional hospital bed.

Consumable and durable supplies

- Inventory existing supplies and estimate resources required to address patient needs during pandemic. For additional details see: <http://www.cdc.gov/flu/flusurge.htm>.
- Consider stockpiling enough consumable resources such as masks for the duration of a pandemic wave (6-8 weeks).
- The existing system for tracking available medical supplies in the hospital should be evaluated as to whether it is capable of detecting rapid consumption, including PPE. Improve the system as needed to respond to growing demands for resources during an influenza pandemic.

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- Assess anticipated needs for consumable and durable resources, and determine a trigger point for ordering extra resources. Estimate the need for respiratory care equipment (including mechanical ventilators), and develop a strategy for acquiring additional equipment if needed.
- Consider adopting strategies for using all available resources; triaging the use of critical resources, like ventilators; and establishing a criteria system with triggers for allocating scarce resources.
- Anticipate needs for antibiotics, as well as other medications such as antipyretics and steroids, to treat complications of influenza, and determine how supplies can be maintained during a pandemic.

Continuation of essential medical services

Address how essential medical services will be maintained for persons with chronic medical problems served by the hospital (e.g., hemodialysis patients, drug infusion therapy, etc.)

H. Mortuary Issues

DHMH, Local Health Departments, and hospitals must prepare for the possibility that mass mortalities may result from pandemic influenza. In Maryland, the Office of the Chief Medical Examiner (OCME) is responsible for investigating death while the State Anatomy Board is responsible for caring for the State's dead. There are no coroners in Maryland and no local offices of medical examiners but rather a statewide system.

The following steps should be included in pandemic influenza plans:

- Assessment of current capacity for refrigeration of deceased persons
- Mass fatality plans including temporary sites to accommodate morgue surge
- Consult with the OCME to project the supply and equipment needs to handle an increased number of deceased persons. Use of FluSurge software will assist in identifying potential needs (<http://www.cdc.gov/flu/flusurge.htm>)

III. Alternate Care Sites (ACS)

Planning and effective delivery of care in outpatient settings is critical. Appropriate management of outpatient influenza cases will reduce progression to severe disease and thereby reduce demand for inpatient care. A system of effective outpatient management will have several components. To decrease the burden on providers and to lessen exposure of the "worried well" to persons with influenza, telephone hotlines should be established to provide advice on whether to stay home or to seek care. Most persons who seek care can be managed appropriately by outpatient providers. Health care networks may designate specific providers, offices, or clinics for patients with influenza-like illness. Nevertheless, some persons with influenza will likely present to all medical offices and clinics so that planning and preparedness is important at every outpatient care site. In underserved areas, health departments may establish influenza clinics to facilitate

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access. Hospitals should develop a strategy for triage of potential influenza patients, which may include establishing a site outside the Emergency Department where persons can be seen initially and identified as needing emergency care or may be referred to an outpatient care site for diagnosis and management. Finally, home health care providers and organizations can provide follow-up for those managed at home, decreasing potential exposure of the public to persons who are ill and may transmit infection.

Effective management of outpatient care in communities will require that health departments, healthcare organizations, and providers communicate and plan together. Issues to address include:

- Plan to establish and staff telephone hotlines for providing the public with information about seeking care during a pandemic.
- Develop training modules, protocols and algorithms for hotline staff
- Within health care networks, develop plans on the organization of care for influenza patients and develop materials and strategies to inform patients on care-seeking during a pandemic.
- For clinics and offices, develop plans that include education, staffing, triage, infection control in waiting rooms and other areas, and communication with healthcare partners and public health authorities.

Non-hospital healthcare facilities

The hospital planning recommendations can serve as a model for planning in other healthcare settings, including nursing homes and other residential care facilities, and primary care health centers. All healthcare facilities should do the following:

- Create a planning team and develop a written plan that builds on the emergency response plan.
- Establish a decision-making communications and coordinating structure that can be tested during the Interpandemic Period and will be activated during an influenza pandemic.
- Determine how to conduct surveillance for pandemic influenza in healthcare personnel and, for nursing homes and homecare, in the population served.
- Develop policies and procedures for managing pandemic influenza in patients and staff including proper infection control practices.
- Educate and train healthcare personnel on pandemic influenza and the healthcare facility's response plan; reinforce infection control practices.
- Develop an educational package directed toward staff and families focusing on the disease, its transmission and proper infection control procedures, and family preparedness plans in the event of a pandemic.
- Develop written material for visitors and others entering the facility focusing on the disease, its transmission and proper infection control procedures.
- Understand the local and state Incident Command System (ICS) structures and methods of communication and coordination with healthcare and public health partners.

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- ☐ Determine how the facility will communicate with patients, residents, and responsible parties and help educate the public regarding prevention and control measures.
- ☐ Develop a plan for procuring the supplies (e.g., PPE) needed to manage influenza patients.
- ☐ Develop a plan for maintaining/expanding operations during the pandemic period by working with healthcare partners and LHDs to recruit volunteers.
- ☐ Determine how the facility will participate in the community plan for distributing either vaccine or antiviral drugs, including possibly serving as a point of dispensing and providing staff for alternative community points of distribution.

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IV. Activities by Pandemic Period

STATE HEALTH DEPARTMENT:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Guide and assist healthcare facilities in planning for a pandemic.
- ☐ Provide for the maintenance of mental health services for health care employees.
- ☐ Recruit volunteers for increased staffing capacity during a pandemic.
- ☐ Educate healthcare providers on potential changes in the healthcare system (protocols, procedures and standards) in a pandemic.
- ☐ Provide consultation to LHDs and healthcare providers, as needed, on suspect novel influenza cases or influenza outbreaks.
- ☐ Work with healthcare providers on securing volunteers to be used to expand the capacity of traditional triage to alternate areas of existing buildings.
- ☐ Provide ongoing information to healthcare facilities and LHDs on the progression of influenza that will inform their decisions on triage procedures.
- ☐ Assess capacity and capability of health care and emergency response systems to meet needs in a pandemic.
- ☐ Issue routine influenza advisories to health care providers encouraging vaccination.
- ☐ Provide technical assistance and guidance as well as disseminate up-to date pertinent information and advisory alerts.
- ☐ Promote enrollment in Maryland's Health Care Volunteer Corps and Medical Reserve Corps.
- ☐ Promote infection control education and training of EMS personnel.
- ☐ Promote routine annual influenza vaccination of EMS personnel throughout Maryland.
- ☐ Request cemeteries to identify their surge capacity and assess their labor availability and/or labor issues.

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- ☐ Request the Office of the Chief Medical Examiner develop an emergency staffing plan to address the anticipated surge in volume and absenteeism associated with a pandemic
- ☐ Review pertinent legal authorities including medical volunteer licensure, liability, and compensation laws for in-state, out of state, and returning retired and non-medical volunteers.
- ☐ Collaborate with partners to establish criteria for alternate standards of care.
- ☐ Link with local emergency management office for activation of Medical Reserve Corps (MRC).
- ☐ Maintain Maryland Health Care Volunteer Database.
- ☐ Maintain a state-based ESAR-VHP program to provide advanced registration and credentialing of health professionals who would augment a hospital or medical facility's staff during a declared emergency.
- ☐ Work with health care provider organizations to provide technical and planning assistance.
- ☐ Identify contacts (names/titles) at each health care facility/agency that may have a role in responding to a pandemic. Multiple means of communication (phone, beeper, cell phone, e-mail, etc.) for contacting each person should be listed.
- ☐ Increase enrollment in and utilization of the health provider network (HPN) and assist facilities/agencies in their use of the HPN.
- ☐ Conduct periodic meetings or teleconferences with provider associations to provide planning updates and discuss issues.
- ☐ Work with the Office of the Chief Medical Examiner to:
 - ☐ Identify the surge capacity of funeral firms in the county,
 - ☐ Identify the surge capacity, if any, at the Office of the Chief Medical Examiner,
 - ☐ Identify a threshold for the number of deaths within the county that will be used to determine when different aspects of the plan will be implemented.
- ☐ Continue ongoing communication with the Office of the Chief Medical Examiner and funeral directors.
- ☐ Review pertinent legal authorities including medical volunteer licensure, liability, and compensation laws for in-state, out of state, and returning retired and non-medical volunteers.

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- ☐ **Pandemic Period: WHO Phase 6/Federal Stages 3-6**
- ☐ Advise the Secretary of Health and SEOC on health facility/agency issues.
- ☐ Update LHDs and providers regularly as the influenza pandemic unfolds.
- ☐ Work with LHDs to assist facilities in alerting and deploying volunteers.
- ☐ Work with LHDs to disseminate clear messages to providers to encourage expanding triage capacity/hours of operation and to inform public of triage options.
- ☐ Expedite any necessary approvals for hospitals to temporarily exceed bed capacity and/or establish extension sites to address surge issues.
- ☐ Assist LHDs in identifying healthcare facilities that are projecting shortages or have shortages of food, supplies, pharmaceuticals, equipment and assists with acquisitions as possible.
- ☐ Assist LHDs in identifying healthcare facilities that could accept additional ventilator residents/patients and identify needed supplies, equipment and staff for these facilities.
- ☐ Work with nursing homes capable of surging capacity to provide temporary emergency approval for increased capacity.
- ☐ Issue guidance to providers on decisions made on altered standards of care.
- ☐ Communicate with the SEOC to determine the status of needed volunteers.
- ☐ Activate and deploy volunteers as demand for volunteers at the local level exceeds local resources in accordance with ICS.
- ☐ Employ “FRED” (Facilities Resources Emergency Database), which is an Internet-based application that assists hospitals, health care facilities, and emergency medical providers, to gather and disseminate critical information during major health incidents or mass casualty events.
- ☐ Collaborate with and provide regular updates to State and County EMS
- ☐ Coordinator and EMS agencies regularly as the influenza pandemic unfolds.
- ☐ Monitor status of EMS resources through County EMS Coordinators.
- ☐ Assist in mobilization and allocation of requested resources through SEOC.

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- ☐ Continue to provide information on the evolving pandemic situation through alerts, teleconferences and/or meetings.
- ☐ Partner with LHDs to review, analyze and evaluate data and make recommendations on resource allocation through the SEOC.
- ☐ Work with Centers for Medicare and Medicaid Services (CMS) to provide regulatory relief where indicated.
- ☐ Keep facilities/agencies apprised of any determinations made regarding altered standards of care (each change in standard of care will be the result of the evolving pandemic and will be a measured/proportionate response).
- ☐ Provide technical assistance to facilities and agencies.

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LOCAL HEALTH DEPARTMENTS:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Guide and assist hospitals in planning for a pandemic.
- ☐ Provide for the maintenance of mental health services for health care employees.
- ☐ Recruit volunteers for increased staffing capacity for activities such as epidemiological investigation and other functions during a pandemic.
- ☐ Educate healthcare providers on potential changes in the healthcare system (protocols, procedures and standards) in a pandemic.
- ☐ Identify facilities in the community that could be used as alternate care sites in the event that hospitals and health care facilities are overwhelmed.
- ☐ In consultation with DHMH, develop and implement a plan to immunize direct care providers and essential ancillary staff in a short period of time, should a vaccine be made available for a novel influenza virus causing a pandemic.
- ☐ In consultation with DHMH, develop and implement a plan consistent with the
 - ☐ State's Strategic National Stockpile (SNS) plan to provide antiviral medications for prophylaxis and/or treatment of direct care providers and essential ancillary staff
 - ☐ should antivirals be made available for a novel influenza virus causing a pandemic.
- ☐ Work with DHMH to offer and coordinate infection control education and training of EMS personnel.
- ☐ Coordinate and collaborate with the County Emergency Manager and EMS coordinator to identify alternate means for transporting non-critically ill patients to and between medical facilities.
- ☐ Identify a liaison to the County Emergency Medical Services Coordinator.
- ☐ Provide infection control guidelines during mass fatalities for funeral homes. The Mass Fatality Plan from the Office of the Chief Medical Examiner, State of Maryland, has specific guidance regarding procedures and resources.
- ☐ Conduct a meeting at the county level with active funeral directors, firm managers and the Office of the Chief Medical Examiner to discuss infection control guidelines for handling the event. Guidelines should include:
 - ☐ Infection control precautions
 - ☐ Personal protective equipment
 - ☐ Environmental disinfection

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- ☐ Continue volunteer recruitment programs.
- ☐ Provide adequate training to volunteers to maintain level of competency and preparedness.
- ☐ Ensure volunteers practice by demonstrating capabilities in drill training exercises.

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Work with DHMH to disseminate clear messages to providers to encourage expanding triage capacity/hours of operation and to inform public of triage options.
- ☐ Establish auxiliary care sites, as necessary.
- ☐ Work with DHMH to regularly update providers as the influenza pandemic unfolds.
- ☐ Use volunteers to assist in public health efforts (e.g., public health home care visits, isolation/quarantine visits).
- ☐ Monitor for indications that enhanced triage capacity may be needed, including reports from sentinel physician or walk-in clinics that they cannot accommodate all of the patients requesting appointments for influenza-like illness.
- ☐ Vaccinate direct care providers and essential ancillary staff, at direction of DHMH, if vaccine available.
- ☐ Provide antiviral medications for prophylaxis and/or treatment of direct care providers and essential ancillary staff, at direction of DHMH.
- ☐ Continue ongoing communication with the Office of the Chief Medical Examiner and funeral directors.
- ☐ Assess refrigeration storage needs as appropriate.
- ☐ Communicate with the local funeral firms and cemeteries to assess the status of their current capacity.
- ☐ Collaborate with DHMH and Emergency Management regarding surge capacity and mass disposition.

RESPONSE GUIDANCE

1. Biosurveillance and Laboratory Testing

I. Overview

Established local and statewide surveillance systems are fundamental for detecting influenza activity, identifying the circulating strains, and monitoring the burden of influenza morbidity and mortality. Influenza virus circulates yearly, with the season in the United States identified as October through May. Early identification of novel influenza strains is integral for early identification and intervention to prevent a pandemic.

Enhancing existing influenza surveillance networks can lead to rapid detection of a novel virus strain with pandemic potential. For the purposes of this Plan, the terms ‘novel virus strain’ or ‘novel influenza’ include highly pathogenic avian influenza (HPAI) strains with evidence of more than occasional human cases and some capacity for human to human transmission such as the H5N1 strain currently circulating in Asia, Africa and Europe.

II. Components of Surveillance

Surveillance for Human Infection

Maryland routinely conducts surveillance for influenza, including virologic and disease surveillance, through a variety of methods from multiple partners throughout the state. Information compiled includes laboratory testing data, nosocomial outbreak reports, influenza-like illness by age group, hospitalizations, and pediatric deaths. These routine systems could be enhanced during an influenza pandemic.

□ Virologic Surveillance:

Surveillance of influenza viruses aim to identify and characterize circulating strains to inform annual vaccine formulation and to identify and characterize strains with pandemic potential. The DHMH State Laboratory is equipped and trained to use PCR to detect novel influenza viruses, including H5N1 and other avian influenza strains. Any positive results for novel influenza viruses would be sent to CDC for confirmatory testing.

□ Outpatient Surveillance:

Outpatient surveillance for influenza in Maryland includes the sentinel provider network and syndromic surveillance in emergency rooms. Approximately a dozen healthcare providers across Maryland participate in the sentinel provider network (SPN), a collaborative effort among state health departments, healthcare providers, and CDC. During the influenza season, October through May, these health care providers voluntarily report the number of weekly outpatient visits for influenza-like illness (ILI)

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by age group. This data is analyzed weekly to assess influenza-like illness morbidity in the outpatient setting. CDC develops and maintains reporting materials and systems, serves as a data repository, and provides feedback to the states.

□ **Hospital Surveillance:**

Nosocomial outbreak reporting: Acute care and long-term care facilities are required throughout the year to report any increased incidence in respiratory illness, including suspected and confirmed influenza outbreaks.

Through the Emerging Infections Program (EIP) project, laboratory-confirmed pediatric influenza hospitalizations are monitored in certain hospitals.

In addition, hospitals in Maryland are required by regulation to report pneumonia in a health care worker that results in hospitalization.

Also, syndromic surveillance collects information about illnesses in Maryland emergency room patients. Visits are grouped into syndromes, including febrile and respiratory syndrome, to categorize clinical presentations of patients seeking medical care in hospital emergency rooms.

□ **Mortality Surveillance:**

As part of the 122 cities surveillance system for pneumonia and influenza deaths, Baltimore City reports weekly the total number of deaths and those with influenza or pneumonia listed as a contributing cause of death. In addition, as of October 2004, pediatric deaths due to confirmed influenza are nationally notifiable.

State-level Assessment of Influenza Activity

Maryland provides to CDC weekly assessments of the overall level of influenza activity (i.e. none, sporadic, local, regional, or widespread) in the state. These assessments are used to compare the extent of influenza activity from state to state.

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Definitions of the Influenza Activity Levels

Activity Level	ILI activity/Outbreaks		Laboratory data
No activity	Low	And	No lab confirmed cases
Sporadic	Not increased	And	Isolated lab-confirmed cases
	OR		
Local	Not increased	And	Lab confirmed outbreak in one institution*
	OR		
Regional (doesn't apply to states with ≤4 regions)	Increased ILI in 1 region; ILI activity in other regions is not increased	And	Recent (within the past 3 weeks) lab evidence of influenza in region with increased ILI
	OR		
Widespread	2 or more institutional outbreaks (ILI or lab confirmed) in 1 region; ILI activity in other regions is not increased	And	Recent (within the past 3 weeks) lab evidence of influenza in region with the outbreaks; virus activity is no greater than sporadic in other regions
	OR		
Regional (doesn't apply to states with ≤4 regions)	Increased ILI in ≥2 but less than half of the regions	And	Recent (within the past 3 weeks) lab confirmed influenza in the affected regions
	OR		
Widespread	Institutional outbreaks (ILI or lab confirmed) in ≥2 and less than half of the regions	And	Recent (within the past 3 weeks) lab confirmed influenza in the affected regions
	OR		
Widespread	Increased ILI and/or institutional outbreaks (ILI or lab confirmed) in at least half of the regions	And	Recent (within the past 3 weeks) lab confirmed influenza in the state.
	OR		

* Institution includes nursing home, hospital, prison, school, etc.

□ Other Surveillance:

While influenza is not a reportable disease in Maryland, two clinical laboratories report to DHMH all laboratory positive results of influenza.

Veterinary Surveillance:

In Maryland, surveillance for avian influenza in poultry and poultry industry workers is conducted by the Maryland Department of Agriculture (MDA) and the poultry industry. Diagnostic testing is performed by MDA and industry laboratories, with confirmatory testing by the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Veterinary Services at the National Veterinary Services Laboratories in Ames, Iowa.

In addition, surveillance for avian influenza among wild birds is the responsibility of the Maryland Department of Natural Resources.

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III. Criteria for Assessing and Reporting Possible Pandemic Influenza Cases

DHMH will continue to develop and distribute to healthcare providers the current CDC and DHMH recommendations for enhanced surveillance, case reporting, and laboratory testing.

Assessment

Criteria for assessment may need to be modified throughout the pandemic phases according to the circulating virus and the known epidemiology of the infection at that time. CDC's current criteria is in Appendix 2-A.

Reporting

The systems used by Maryland year-round for influenza surveillance will assist in the state's ability to rapidly detect a pandemic influenza. During the early period of a pandemic, surveillance activities may be intensified through extensive case investigations and contact tracing in order to rapidly detect initial cases of novel influenza virus and track identified cases. In this early period, it will be important to obtain, track, and report the numbers of identified influenza cases, as well as isolated and quarantined persons, in order to inform public health interventions. The state will work with local health departments to ensure that these enhanced surveillance activities occur in the early stages of the pandemic. As the pandemic progresses, it is anticipated that individual case reporting and case tracking will not be feasible.

It is anticipated that individual case reporting will not be feasible once pandemic influenza has been confirmed in Maryland. Surveillance during the pandemic period will focus on data collection mechanisms to assess morbidity and mortality. During this period, it will be important to track the number of pandemic influenza-associated deaths. In addition, select individual case investigations may need to be conducted to guide prevention and control recommendations.

Once a novel strain detected abroad exhibits sustained human-to-human transmission (WHO Phase 6), recommendations for further intensified virologic and disease surveillance will be issued and might include recommendations for stepped-up disease surveillance at ports of entry.

Clinicians should immediately contact the DHMH when they suspect a human case of infection with an avian or animal strain of influenza or with any other novel human influenza strain. Clinical algorithms for managing patients with possible novel influenza infection are provided in the Clinical Guidelines in this plan.

State and local health departments should in turn immediately report to CDC any influenza cases that:

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- Test positive for a novel influenza subtype, *or*
- Meet the enhanced surveillance case definition in effect at that time, *and*
- Cannot be subtyped in the state public health laboratory because appropriate reagents or biocontainment equipment is not available

Reference testing guidelines for potential pandemic strains of influenza are provided in Appendix 2-1 -G.

IV. Laboratory Diagnosis of Human Pandemic Influenza

The following summarizes the procedures for submitting samples to the DHMH State Laboratory. Submitters should also familiarize themselves with the testing capability of their local laboratory and utilize that facility when appropriate services are available. It should be noted that the laboratory procedures used for testing may change depending on the characteristics of the pandemic strain. The DHMH State Laboratory will communicate with the CDC and forward samples and isolates for confirmatory testing when appropriate. Tests for influenza virus include viral culture, polymerase chain reaction (PCR), rapid antigen testing, and immunofluorescence. Serologic tests are used to retrospectively diagnose infection. Specific guidance about DHMH specimen collection and transport protocols and CDC's guidelines for Specimen Testing are in Appendix 2-C. Also, the following is the link the World Health Organization's Field Operating Guide for Collecting, Preserving and Shipping Specimens for the Diagnosis of Avian Influenza:

http://www.who.int/csr/resources/publications/surveillance/WHO_CDS_EPR_ARO_2006_1/en/index.html

Specimen Collection Overview

- Appropriate specimens for testing include: nasal wash /aspirate, nasopharyngeal swab, throat swab, bronchoalveolar lavage, tracheal aspirate, pleural fluid tap, sputum, and autopsy specimens (see HHS: Pandemic influenza plan [Part 2, Supplement 2]).
- Specimens from living patients optimally should be collected within 4 days after illness onset.
- Some rapid test kits require specific specimen types and storage/transport methods.
- Nasopharyngeal swabs, nasal washes, and nasal aspirates are considered to be more sensitive than throat swabs for culture of most respiratory viruses, including convention influenza strains, and are preferred for children younger than 2 years of age.
- Pharyngeal swabs collected 4 to 8 days after onset of illness may be more sensitive for detection of influenza A (H5N1) than nasal swabs (see [References](#): WHO:

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Writing Committee of WHO Consultation on Human Influenza A/H5N1 2005).

- ☐ Only sterile Dacron or rayon swabs with plastic shafts should be used. Calcium alginate swabs or swabs with wooden sticks should not be used.
- ☐ Viral transport media should be used for nasopharyngeal and oropharyngeal swabs and specimens should be maintained at refrigerator temperature (4°C to 8°C) until testing is performed. Freezing at -70°C is best for maintaining viability during extended storage.
- ☐ With regard to autopsy specimens, large airways have the highest yield for immunohistochemistry (IHC) tests. Eight blocks of fixed-tissue specimens from each of the following sites should be obtained. Fixed tissue should be transported at room temperature (not frozen); fresh unfixed tissue should be frozen.
 - ☐ Central (hilar) lung with segmental bronchi
 - ☐ Right and left primary bronchi
 - ☐ Trachea (proximal and distal)
 - ☐ Representative pulmonary parenchyma from right and left lung
- ☐ Infection control precautions should be observed during specimen collection.
- ☐ Specimen collection procedures for animals have been described by the World Health Organization (WHO) (see [References](#): WHO: Manual on animal influenza diagnosis and surveillance).
- ☐ Clinical laboratories should contact DHMH if they receive specimens from patients with possible novel influenza suspected on the basis of clinical and epidemiologic criteria.
- ☐ DHMH will send specimens to CDC if the patient meets clinical and epidemiologic criteria and (1) tests positive for influenza A by reverse transcriptase polymerase chain reaction (RT-PCR) or rapid testing or (2) tests negative for influenza A by rapid testing and RT-PCR is not available. If the DHMH Laboratories do not have capacity for testing avian strains by indirect immunofluorescence (IFA) or RT-PCR, the DHMH Laboratories will send untypable influenza isolates to CDC.

V. Epidemiologic Surge Capacity

During the inter-pandemic phase, epidemiologic investigation of any suspect and confirmed human novel influenza virus infections will be extensive to attempt to limit transmission. If a novel strain of influenza that is capable of person-to-person transmission is suspected in Maryland, staff may need to be mobilized in a short time frame to conduct surveillance activities, outbreak investigations, contact tracing, and to implement control measures. As a supplement to local health department staff, DHMH

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Office of Preparedness and Response; the Community Health Administration, Epidemiology and Disease Control Program may be utilized.

Other local and state public health staff may need to be mobilized and receive just in time training to assist with case investigations, contact tracing, and ensuring control measures are being implemented.

Once an influenza pandemic has been confirmed, public health epidemiologic resources may need to be diverted from intense case investigation and contact tracing to tracking the geographic distribution of illness, calculating the morbidity and mortality, and determining the overall epidemiology of the outbreak. This will be critical to target public health resources and modify prevention and control measures.

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2. PUBLIC HEALTH COMMUNICATIONS

I. Overview

As described in the DHMH ESF 8: Health and Medical Operational Plan Concept of Operations, DHMH must communicate with Health Agencies, such as local health departments and to the public, whether individuals or public organizations like businesses and non-profit organizations.

Continual communications with local health departments will ensure the sharing of information and the development of effective response tactics.

Pre-event communications to the general public will alert them of how they can best prepare themselves for a pandemic. During a pandemic, timely and accurate communication with the public will help ensure the highest level of cooperation and compliance with public health actions.

Additionally, DHMH and LHD's will maintain two-way communications with state and local partners and stakeholders, such as emergency management agencies and the SEOC. In order to ensure this communication is maintained throughout an emergency, DHMH will take advantage of various types of communication media such as telephone, fax and internet.

Additionally, use of information systems such as HAN and in accordance with PHIN, will be invaluable throughout all phases and tiers of an emergency response.

II. Spokespersons and Subject Matter Experts

The Secretary of DHMH, or his designee, will be the primary spokesperson regarding emergency health issues related to pandemic flu.

Subject matter experts representing the Office of Preparedness and Response, Community Health Administration, and Laboratory Administration will support the primary spokesperson(s) and may serve as secondary spokespersons if their specific expertise is required.

III. Information Release and Joint Information Center

During a Pandemic Period, to update public information and provide recommended action steps in a timely manner, DHMH will facilitate expedited review and clearance of communication products, share public messages with key communication partners and participate in a Joint Information Center (JIC).

A JIC will be coordinated by MEMA. The purpose of a JIC will be to facilitate a one-voice response; serve as the clearinghouse for accurate, timely information; and enhance the dissemination of health information essential to an effective health emergency response.

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The media will be the primary information resource for all target audiences during a Pandemic Period. It must be recognized that the media will play an essential role in creating an informed public. However, inaccurate or exaggerated press reports can fuel public concern far in excess of an actual health risk. Thus, there must be a constant source of timely “official” public information to reduce rumors that otherwise will quickly fill an information vacuum.

A. Risk Communication

It is important during an emergency event to convey complex information clearly and simply. The communication resources on the next page provide information about crisis, emergency, and pandemic flu risk communications. They are available at <http://www.pandemicflu.gov/rcommunication/>.

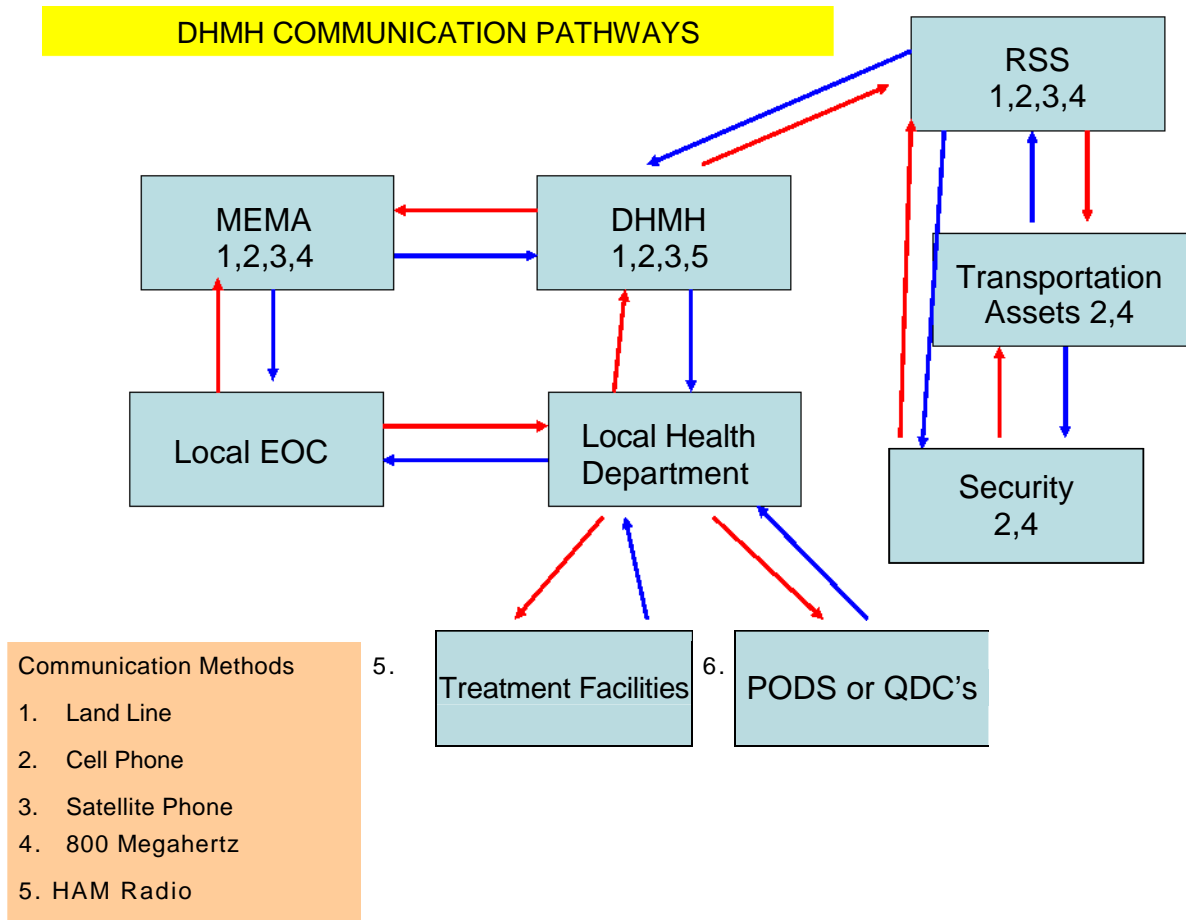
Resources

The following communication resources provide information about crisis, emergency and pandemic flu risk communication. These and others are available at: <http://www.pandemicflu.gov/rcommunication/>

- ☐ [Pandemic Influenza Pre-Event Message Maps \(PDF\) \(220KB\)](#) "Message maps" are risk communication tools used to convey complex information, and to make it easier to understand. Each primary message has three supporting messages that can be used to provide context for the subject of the primary message. This file contains message maps for both avian flu and pandemic influenza.
- ☐ [WHO Handbook for Journalists: Influenza Pandemic \(PDF\) \(738KB\)](#)
- ☐ [WHO Outbreak Communications Guidelines \(PDF\) \(452KB\)](#) (World Health Organization)
- ☐ [Influenza Pandemic Periodicity, Virus Recycling, and the Art of Risk Assessment](#) (Centers for Disease Control and Prevention)

Source: <http://www.pandemicflu.gov/rcommunication/>

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IV. Activities by Pandemic Period

The following activities supplement those responsibilities already outlined in the *DHMH ESF 8:Health and Medical Operational Plan* and the *DHMH Functional Annex for ESF 8 Response*.

STATE HEALTH DEPARTMENT:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Maintain contact information for key stakeholders and exercise pandemic influenza communications.
- ☐ Establish and maintain partnerships with public information staff from state, regional and local government agencies; hospitals and hospital industry organizations and others.
- ☐ Facilitate training opportunities for appropriate DHMH key staff.
- ☐ Update information on Maryland's official public pandemic influenza website www.flu.maryland.gov.
- ☐ Develop a variety of communications materials for various pandemic phases and potential scenarios (such as draft press releases, Public Service Announcements (PSAs), fact sheets, etc.) and for special populations. Include the expertise of behavioral health experts.
- ☐ Provide public information and education on infection control and community containment strategies to reduce disease transmission.
- ☐ Establish and/or maintain capacity for a public "call center" to provide risk communication along with public information.

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Participate in risk communication conference calls, monitor HHS/CDC telebriefings, and share information with other states via the National Public Health Information Coalition.
- ☐ Participate in a JIC, if one is established.
- ☐ Finalize draft public notices and ensure they are reviewed by the appropriate executive and program staff, and, as necessary, the Governor's press office.

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- Make regular public announcements to the media and partners in private industry, education, and non-profit organizations regarding an influenza pandemic via the JIC, the Governor, the Secretary of Health or designated spokespersons. Include the expertise of behavioral health experts.
- Disseminate information via bulk faxing to news agencies and partners in private industry, education, and non-profit organizations, and post news releases on the Maryland web site www.flu.maryland.gov.
- Update information on Maryland's public website www.flu.maryland.gov.
- Use the Emergency Alert System (EAS channels) and activate public call centers to provide public information and risk communication to the public, to include:
 - Respiratory etiquette and hand hygiene, mask usage and stay at home messages.
 - Community containment messages and travel alerts.

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LOCAL HEALTH DEPARTMENTS:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Provide public information and education on infection control and community containment strategies to reduce disease transmission. Include special populations.

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Coordinate risk communication with key partners to enhance message consistency.
- ☐ Activate public call centers to provide risk communication along with public information.
- ☐ Communicate and reinforce respiratory etiquette and hand hygiene, mask usage and stay at home messages, community containment messages, and travel alerts.

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V. Additional Procedures

- DHMH Office of Public Relations will coordinate with the DHMH Office of Preparedness and Response PIO to notify the Centers For Disease Control and Prevention's (CDC's) Office of Communication, the National Public Health Information Coalition, and the local health department Public Information Officer contacts. (All of these entities will receive copies of any releases or advisories during the course of this activity.)
- The Office of Public Relations, working with the Office of Preparedness and Response PIO and the DHMH Secretary or designee, depending on volume and nature of the calls, will decide on the appropriate response to media inquiries. The Office of Public Relations will notify the Governor's Press Secretary, Lieutenant Governor's Press Secretary, Maryland Emergency Management Agency Public Affairs Director, and other relevant agency communication directors.
- If initial media calls warrant it, a press conference will be scheduled immediately. The DHMH Secretary or designee will lead the press conference and work with the Office of Public Relations to determine who else needs to be involved in the press conference.

Regular Briefings

- The Office of Public Relations, working with the DHMH Secretary or designee, will decide what level of regular briefing needs to occur.
- If there are few new details, then updates will occur by press release or news conference around 2 p.m. whenever possible.
- All press releases will quote the DHMH Secretary or designee as spokesperson.

News Conferences

- News conferences will be held only if there are newsworthy details.
- All news conferences will be led by the DHMH Secretary or designee.
- All news conferences will be at the most convenient and appropriate location.
- Notification of news conferences will occur in the following fashion:
 - ☐ E-mail to Associated Press (AP) atbalpr@ap.org (fax 410-837-4291) and then all other statewide or local media.
 - ☐ Call the following media outlets (these news outlets have the ability to cover the press conference in Baltimore as well as sending it out statewide) and tell them the issue:
 - ☐ AP (410-837-8315) – ask them to run it as an urgent on their daybook.

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- ☐ Baltimore Sun (410-332-6100) -- don't leave a message -- zero-out until you get a person.
- ☐ Washington Post Maryland News Desk (202-334-7313) -- don't leave a message -- zero-out until you get a person.
- ☐ Call the following members of the electronic media and ask for the assignment editor -- make sure they know that a press conference is scheduled:
 - ☐ WBAL Radio (410-889-1465)
 - ☐ WBAL-TV (410-338-6501)
 - ☐ WMAR-TV (410-377-2222)
 - ☐ WJZ-TV (410-466-1152; 410-578-5765, 7566, 7568)
 - ☐ WBFF (Fox 45) TV (410-467-5595)
 - ☐ Metro News Networks (301-628-2700)
 - ☐ WTOP Radio (202-895-5060)
 - ☐ WUSA TV Ch. 9 (202-895-5700)
 - ☐ WMAL Radio (202-686-3020)
 - ☐ WRC TV Ch. 4 (202-885-4111)
 - ☐ NBC- 8TV (703 912-5361)
 - ☐ WJLA TV Ch. 7 (202 364-7715)
 - ☐ WTTG TV, Ch. 5 (202 895-3000)

News Releases

- ☐ News releases will be sent to all state media via e-mail and/or fax.
- ☐ The AP will receive the first release, and the Office of Public Relations will call to confirm that it was received.
- ☐ If a particular area of the state is involved, then the news release will be sent to all media in that area following the initial release to the AP. Local media in the affected area will be called to ensure that they received the information.

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VI. Step down from Plan

- ☐ This plan remains in effect until the Health Secretary determines it is time to step down.
- ☐ If at any point law enforcement becomes the lead in the investigation, then the DHMH Office of Public Relations will hand over control to the appropriate law enforcement agency and will support that office as requested.

VII. Important phone numbers: (Waiting for updates)

Governor's Office, Communications Director

Steve Kearney/410-974-2316/ Cell Ph. 443-336-1539

Email: skearney@gov.state.md.us

Governor's Office, Communications Deputy Director and Press Secretary

Governor's Office, Press Secretary

Rick Abbruzzese/410-974-2316/ Cell Ph. 410-336-1556

Email: rabbruzzese@gov.state.md.us

Governor's Office, Deputy Press Secretary

Sasha Leonhardt/410-974-2316/ Cell Ph. 443-336-5270

Email: sleonhardt@gov.state.md.us

Lieutenant Governor's Press Secretary

Samantha Kappalman/410-974-2804/ Cell Ph. Pending

Email: skappalman@gov.state.md.us

Maryland Emergency Management Agency, Public Affairs Director

Jeff Welsh / 410-517-3631 / Cell Ph. 410-979-8979 / Pager 410-806-5748

Email: jwelsh@mema.state.md.us

Maryland Emergency Management Agency, Deputy Public Information Officer

Ed McDonough / 410-517-3632 / Cell Ph. 410-466-3333 / Pager

Email: emcdonough@mema.state.md.us

Maryland State Police, Public Affairs Director

Greg Shipley / 410-653-4236 / Cell Ph. 443-250-3724 / Pager 410-806-2907

Email: gshipley@mdsp.org

Department of the Environment, Director of Communications

Julie Oberg /410-537-3010 / 410-537-3003 / Cell Ph. & Pager 443-463-9355

Email: joberg@mde.state.md.us

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MIEMSS, Director of Public Relations

Jim Brown / 410-706-3994 / Cell Ph. 410-365-4422 / Pager 410-475-9691

[Email: jbrown@MIEMSS.org](mailto:jbrown@MIEMSS.org)

Department of Transportation, Public Affairs Director

Jack Cahalan / 410-865-1025 / Cell Ph. 443-829-4677 / Pager: 410-471-9407

[Email: jcahalan@mdot.state.md.us](mailto:jcahalan@mdot.state.md.us)

Department of Transportation, Deputy Public Affairs Director

Erin Henson / 410-865-1028 / Cell Ph. 443-829-9386 / Pager: 410-909-9744

[Email: ehenson@mdot.state.md.us](mailto:ehenson@mdot.state.md.us)

SHA, Director of Communications

Valerie Burnette Edgar / 410-545-5658 / Cell Ph. 443-463-7129

[Email: vburnetteedgar@sha.state.md.us](mailto:vburnetteedgar@sha.state.md.us)

SHA, Media Relations Manager

David Buck / 410-545-0309 / Cell Ph. 443-463-7139

[Email: dbuck1@sha.state.md.us](mailto:dbuck1@sha.state.md.us)

Department of Business and Economic Development, Executive Director of Public Relations

David Tillman 410-767-6317 / Cell Phone 443-928-9287

[Email: dtillman@choosemaryland.org](mailto:dtillman@choosemaryland.org)

Department of Agriculture, Director of Communications

Sue duPont / 410-841-5881 x5889 / Cell Ph. 443-995-0950

[Email: dupontsk@mda.state.md.us](mailto:dupontsk@mda.state.md.us)

Department of General Services - Director of External Affairs

Dave Humphrey / 410-767-4652 / Cell Ph. 443 -928-9282

[e-mail: dave.humphrey@dgs.state.md.us](mailto:dave.humphrey@dgs.state.md.us)

3. COMMUNITY CONTAINMENT/MITIGATION

I. Overview

The goal of Community Containment is to slow the spread of pandemic influenza. This section describes steps that the DHMH may take to mitigate the risks of an influenza pandemic and controlling the spread of infection to others. Community interventions discussed here may also be needed to control or mitigate a pandemic when individual case-based interventions like traditional isolation and quarantine tactics (see *DHMH Isolation and Quarantine Annex*) are not sufficient and before an effective vaccine is available in sufficient quantity to be used as a primary control strategy.

Legal implications

The use of community-wide mitigation strategies, such as business and school closures, has legal implications and is therefore governed by multiple laws. Information regarding these laws is contained in the *DHMH ESF8: Health and Medical Operations Plan* in the Policy/Legal Authority section as well as the *Maryland Public Health Emergency Preparedness Legal Handbook* at <http://www.umaryland.edu/healthsecurity/docs/Handbook%209-9-05.pdf>.

The following identifies and provides an overview of the key elements of Community Containment and Mitigation.

II. Objectives

The overall goal during a pandemic is to end transmission by assuring those who are ill do not infect others, those who are infected do not get ill and those not infected do not become infected. It is also intended to minimize social and economic impact.

The use of Community Containment and Mitigation strategies are essential to achieving these goals. The success of these strategies depends on their appropriate and timely use. The Severity Index, as described in the introduction to this document and expanded upon in the *DHMH Community Containment Annex*, is a critical tool to the appropriate application of these strategies.

III. Strategies

Surveillance to identify patients and contacts

In order to isolate ill persons, one of the initial steps will be the safe and rapid identification of persons with influenza-like illness (ILI) utilizing the CDC case definition for reference. Surveillance will be critical for assisting in the early identification of ILI as well as a tool for monitoring and tracking ILI across the State.

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Surveillance will continue to be a key tool after the presence of human cases of a novel influenza virus is confirmed. Surveillance should include case and contact identification with data gathered to support the use of individual case-based and community-based interventions.

In a community experiencing a disease cluster a combination of providing the public with guidance for self-assessment of illness and the use of influenza hotlines may be utilized to detect potential influenza disease and conduct community triage to direct persons with symptoms to the appropriate site and level of care. Guidance will also be provided for businesses to assist in the identification of ill individuals in the workplace and appropriate intervention.

Voluntary patient isolation

Infection control precautions and procedures for isolating influenza patients at home or in a residence, community facility or hospital will be described in the *DHMH Community Containment Annex*. Such control measures are a first line management action intended to control transmission of the disease in the community.

Management of close contacts

Close contacts include a patient's family, friends, work colleagues, classmates, fellow passengers and/or health care providers. Management of contacts might include passive or active monitoring without quarantine. Quarantine should be implemented only when there is a high probability that the ill patient is infected with a novel influenza strain that may be transmitted to others.

Containment of small clusters of infection

This intervention includes investigation of disease clusters, administration of antiviral treatment to persons with confirmed or suspected pandemic influenza and provision of drug prophylaxis, as available, to all likely exposed persons in the affected community.

The transition from case-based to community-based interventions

Community-based interventions will be considered if;

- ☐ The spread of the disease is no longer limited to known chains of transmission but instead has evolved into community transmission where not all contacts can be traced.
- ☐ Continued contact tracing is impossible or impractical
- ☐ Mass gathering pose a risk of furthering the spread of the disease
- ☐ There is a risk of spread of the disease within or between communities

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Community-wide infection control measures

All persons with signs and symptoms of a respiratory infection will be encouraged to practice infection control practices to prevent exposure of contacts to respiratory secretions. Persons at high risk for complications of influenza will be advised to avoid public gatherings including going to public areas such as food stores and pharmacies.

Social distancing

An important community control measure may include asking everyone to stay home from work and not socialize in other ways. Such non-pharmaceutical interventions could slow transmission. Closure of office buildings, shopping malls, schools and public transportation may also be utilized during a pandemic. It is critical that the circumstances that would call for such closures be considered through planning early in the course of a possible pandemic. Plans must also include special needs populations needing things such as mental health services, food and medical supplies. Guidance for employers to plan for increased absenteeism due to school closure, illness or voluntary home quarantine is included in the *DHMH Community Containment Annex*. Those closures will need to be coordinated with plans to care for children displaced from school and child care, for example.

Travel restrictions

Although travel restrictions may not be widely recommended during a pandemic people may choose to take precautions at the individual level, such as limiting non-essential travel.

Community quarantine

In extreme circumstances public health officials may consider the use of community quarantine. Unlike social distancing described above, quarantine may involve a legally enforceable option.

Communication

Prevention messages will be communicated using the traditional media, internet and public display (i.e. posters). In each case messages will be translated into appropriate languages and ensure cultural appropriateness.

Effective communication from trusted officials (medical personnel, elected officials, clergy and others) is critical throughout the various stages of control. All interventions intended to control the spread of disease will require voluntary support of all groups, individuals, businesses and institutions in the community. There will also be a substantial number of worried well and those who anticipate that vaccine distribution will be imminent and end the pandemic. Regular, honest and substantive information and

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guidance from those trusted officials is imperative for the effective management of a pandemic.

Scaling back community control and containment measures

The decision to discontinue community-level measures must balance the need and desire to lift individual movement restrictions against community health and safety. Generally, the most restrictive or disruptive measures will be discontinued first. These recommendations would be communicated to the public through traditional public health methods, such as media, internet, etc.

For more details on Maryland's community containment procedures, please refer to the separate *Community Containment Annex*.

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3.A Infection Control and Clinical Guidelines

I. Infection Control Guidelines Background

Infection control precautions are measures that are used to reduce the transmission and acquisition of infectious agents, including pandemic influenza. Infection control precautions are typically practiced by healthcare workers and include:

- Proper hand hygiene;
- Scrupulous work practices;
- Use of Personal Protection Equipment (PPE) including masks, respirators, gloves, gowns, and eye protection.

Infection control measures are based on how an infectious agent is transmitted and include the following:

- Standard
- Contact
- Droplet
- Airborne

Based on the current understanding of the transmission of the influenza virus, DHMH recommends full barrier infection control precautions (contact and airborne precautions plus eye protection) in addition to standard precautions for healthcare workers providing care for known or suspected avian or pandemic influenza-infected patients.

Although developed for use in healthcare facilities, infection control measures can be modified for use in other settings such as workplaces, schools, day care centers, homes, alternate care sites, etc. Infection control precautions will be critical in slowing and minimizing the transmission of pandemic influenza.

II. Infection Control Triggers by Pandemic Period

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

During the Inter-Pandemic and Pandemic Alert Periods, the following events may serve as infection triggers:

- Evidence of animal-to-human transmission
- Evidence of limited human-to-human transmission
- Evidence of increased human-to-human transmission
- Evidence of significant human-to-human transmission

Pandemic Period: WHO Phase 6/Federal Stages 3-6

In addition to the infection control trigger points for the Inter-Pandemic/Pandemic Alert Periods, the following trigger point may come into play during the Pandemic Period

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- ☐ Efficient and sustained human-to-human transmission

III. Infection Control Actions by Pandemic Period

STATE HEALTH DEPARTMENT:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Formulate infection control guidance for avian and pandemic influenza based upon the review of the latest scientific literature and CDC recommendations
- ☐ Provide education to appropriate DHMH staff on infection control recommendations for avian and pandemic influenza
- ☐ Disseminate avian and pandemic influenza infection control guidance to clinicians, infection control practitioners (ICPs), occupational health personnel, mortuary science personnel, local public health department (LHD) staff, and other partners statewide.
- ☐ Develop internal guidance for the purchase of PPE
- ☐ Work with LHDs and other groups to identify ambulatory care clinics in the state and develop methods for communicating with these clinics that will complement the Health Alert Network
- ☐ Assist healthcare facilities in planning efforts for avian and pandemic influenza in collaboration with the Healthcare System Preparedness Program.
- ☐ Develop infection control training materials for healthcare workers
- ☐ Inform clinicians, and ICPs about the current suspect and confirmed AI case definitions and provide guidance for patient triage to ensure prompt identification and isolation of suspect AI patients
- ☐ Inform clinicians, ICPs, and others about AI infection control recommendations for hospitals, emergency departments, urgent care, and other ambulatory settings, long term care facilities, and alternate care sites for evaluation and care of possible cases
- ☐ Develop infection control material for persons in isolation and quarantine
- ☐ Assist in the development of recommendations related to disease containment
- ☐ Develop infection control guidance for mass dispensing sites, the care of pandemic influenza patients and care givers in the home setting, and the general public
- ☐ Assist LHDs in identifying appropriate isolation and quarantine facilities for persons who cannot be isolated or quarantined at home
- ☐ Provide guidance for LHDs and first responders regarding infection control for pandemic influenza
- ☐ Develop infection control material for LHDs and first responders.

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Pandemic Period: WHO Phase 6/Federal Stages 3

- ☐ Update and redistribute DHMH clinical and infection control recommendations for healthcare facilities as necessary
- ☐ Inform clinicians and ICPs about any changes in suspect and confirmed pandemic case definitions and guidance for patient triage
- ☐ Inform clinicians and ICP's about any changes in the epidemiology of pandemic influenza that may affect infection control recommendations
- ☐ Identify supplies of PPE and other supplies for LHDs for people in isolation and quarantine in their jurisdictions
- ☐ Assist in the development of recommendations related to disease containment measures
- ☐ Assist with the training of volunteers and other people to provide care for influenza patients as needed
- ☐ Assist healthcare facilities with issues relating to monitoring and antiviral prophylaxis of exposed healthcare workers

Pandemic Period: WHO Phase 6/Federal Stages 4-6

- ☐ Update and redistribute DHMH clinical and infection recommendations for healthcare facilities as necessary
- ☐ Develop additional infection control guidance for alternate care sites, home care settings, as needed
- ☐ Provide infection control consultation to clinicians, ICPs, LHDs, care givers, and the general public
- ☐ Maintain communication with clinicians, ICPs, LHDs, and others to stay abreast of any infection control issues that arise in healthcare facilities or the community
- ☐ Develop and revise educational and informational tools as necessary to provide consistent and current infection control guidance
- ☐ Assist in the development of recommendations related to disease containment
- ☐ Coordinate with DHMH website staff to assure that posted infection control guidance is current
- ☐ Ensure that hotline/warm line staff are informed of current infection control recommendations
- ☐ Continue to assist with the training of additional personnel to provide care for influenza patients, as needed
- ☐ Based on the epidemiology and CDC recommendations of pandemic influenza,

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develop and distribute information to;

- Clinicians

Infection Control Practitioners

- Healthcare workers including EMS

- LHDs

- Public safety personnel and first responders

- Critical infrastructure personnel

- Local and state elected officials

- Influenza patients and care givers

- General public

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3.B Clinical Guidelines Overview

During Federal Government Response Stages 0-4 (WHO Phases 1-5), early recognition of illness caused by a novel influenza A virus strain will rely on a combination of clinical and epidemiologic features with laboratory confirmation when possible. During Stages 5-6 (in a setting of high community prevalence), diagnosis will likely be more clinically oriented because the likelihood will be high that any severe febrile respiratory illness is pandemic influenza.

V. Clinical Guidelines Actions by Pandemic Period

State Health Department:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Notify clinicians, Infection Control Practitioners (ICPs), LHDs, hospitals, and other healthcare facilities across the state about clinical and epidemiologic criteria for suspect cases of H5N1/other novel influenza strains and updates as they occur
- ☐ Coordinate protocols with the DHMH State Laboratory to:
 - Facilitate quick delivery of appropriately collected specimens to the DHMH State Laboratory
 - Communicate the relative urgency of testing for different patients based on the strength of epidemiological and clinical data, isolation and quarantine (IQ) issues related to individual cases
 - Track the capacity/burden of the DHMH testing
 - Efficiently communicate the results from the DHMH State Laboratory to appropriate DHMH staff and the patients provider
- ☐ Contract with infectious disease physician(s) to consult with clinicians in the state on complex cases/issues related to pandemic influenza
- ☐ Assess the need for and establish a DHMH stockpile of oseltamivir and other appropriate medications for treatment and prophylaxis in coordination with the Strategic national Stockpile
- ☐ Develop funding mechanisms for stockpiling antivirals and PPE-reimbursement or cost sharing by hospitals, state funding or other means
- ☐ Identify additional personnel for staffing warm lines for clinicians during a pandemic period

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- ☐ Determine a system for monitoring viral strains for antigenic changes, and antiviral resistance in coordination with CDC during later pandemic alert phases and the pandemic period
- ☐ Work with an internal DHMH IQ and legal teams to implement IQ
- ☐ Work with the IQ team to address clinical questions of individuals or groups in IQ
- ☐ Facilitate the evaluation and assist with clinical questions about individual or groups in IQ

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Provide clinicians, hospitals, alternate care sites, and other healthcare facilities with updated recommendations on the clinical care of patients with pandemic influenza
- ☐ Continue to coordinate with CDC on the changes in the case definition of pandemic influenza
- ☐ Coordinate with CDC about the monitoring of antigenic changes and viral resistance of the novel influenza virus

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5. MASS VACCINE PROCUREMENT, DISTRIBUTION AND USE

I. Overview

Once available, a vaccine against the circulating pandemic virus strain will be a major focus of pandemic response efforts. Ensuring rapid, efficient, and equitable distribution of vaccine is central to pandemic planning. Vaccine will be key to reducing the morbidity and mortality. Supplies are likely to be limited during the early stage of the pandemic.

The Department of Health and Human Services (DHHS) and the National Vaccine Advisory Committee (NVAC), in cooperation with the CDC and the Advisory Committee on Vaccine Practices (ACIP), have begun work to provide guidance on prioritization during a pandemic. The categories that have been specified are included in this plan (Appendix 4). Any priority groups established during the interpandemic period will have to be reassessed, and likely altered, as epidemiologic data on the specific pandemic virus becomes available.

II. Vaccine Procurement and Distribution

The administration of vaccine will be central to a response to an influenza pandemic, although there may be significant morbidity and mortality in the period during which an effective vaccine is being developed and produced in sufficient quantities.

It is assumed that the Federal government will control the supply of vaccine in the United States and that the states will be responsible for distribution of vaccine within their respective jurisdictions. In Maryland, the Department of Health and Mental Hygiene will use the SNS plan to take the lead in determining the distribution of vaccine to local health departments and providers for administration to the public.

III. Vaccine Adverse Event Monitoring and Reporting (VAERS)

In the U.S., national surveillance for adverse events following immunization is routinely conducted through the Vaccine Adverse Event Reporting System (VAERS), which is managed jointly by the CDC and FDA. During a pandemic, VAERS would remain the major reporting mechanism.

Serious adverse events associated with the use of antiviral influenza drugs should be reported to the FDA, using the Med Watch monitoring program. MedWatch forms are available at <http://www.fda.gov/medwatch/>. Adverse events reported to Med Watch are collated and analyzed by the FDA's Adverse Events Reporting System (AERS).

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IV. Cold Chain and Distribution

Maryland is in the process of negotiations with two contractors to provide cold storage and maintenance of the vaccine cold chain. These contractors also have the capability to maintain a cold chain during distribution of the vaccines. At least two contractors will be used in order to provide redundant capability for the State.

V. Security Plans

Maryland was given credit for providing; reviewing and maintaining security plans for local points of distribution (PODs) during the most recent Division of Strategic National Stockpile Technical Assistance Review conducted September 25, 2007. The Security Survey Templates were developed by the United States Marshal's Service, Office of Emergency Management and forwarded to the Local Health Departments on April 30, 2007. All jurisdictions have completed these surveys and are on file with the Strategic National Stockpile Coordinator.

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VII. Activities by Pandemic Period

STATE HEALTH DEPARTMENT:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Continue to promote and provide use of annual influenza vaccine.
- ☐ Continue to promote and provide the use of pneumococcal vaccine.
- ☐ Identify a process for reviewing national recommendations for pandemic influenza vaccination use, and for developing state specific modifications or refinements in priority groups.
- ☐ Develop specific definitions for priority groups identifying occupational categories and sub-categories.
- ☐ Plan for mass distribution of vaccines to priority groups.
- ☐ Develop a plan on how persons in priority groups would be identified and how vaccine would be most efficiently provided to those groups.
- ☐ Develop a plan to vaccinate to the remainder of the population after priority groups have been exhausted.
- ☐ Educate stakeholders and the public about the need for priority groups and the rationale for the groups recommended.
- ☐ Provide information to health professionals and the public on issues related to availability and use of vaccine during an influenza pandemic.
- ☐ Plan for the use and training of non-licensed persons to administer vaccines.
- ☐ Continue public health preparedness activities in regard to mass distribution of vaccine.
- ☐ Identify or develop a statewide data collection system that can collect all required vaccine data elements.
- ☐ Ensure that the system can be used to supply required elements to CDC and calculate vaccine coverage and efficacy rates.
- ☐ Provide information on vaccine data collection to Local Health Departments (LHDs).

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Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Work with LHDs and health care partners to distribute, deliver, administer, and track pandemic vaccine to priority groups.
- ☐ Track vaccine supply in the state and redistribute as needed.
- ☐ Continue to review and revise priority groups, and communicate changes and their rationale to LHDs and health care partners.
- ☐ Phase-in vaccination for the rest of the population after priority groups have been exhausted.
- ☐ Collect vaccine adverse event data from LHDs and providers.
- ☐ Consult with CDC on adverse events as needed.
- ☐ Report all adverse events to VAERS.
- ☐ Update LHDs and providers on any new adverse events identified or any updates on the adverse event profile.
- ☐ Conduct active surveillance and reporting of adverse events, as needed.
- ☐ Provided guidance to LHDs for case investigation of adverse events.
- ☐ Provide technical assistance to LHDs.
- ☐ Collect data from LHDs on vaccine efficacy and coverage and transmit to CDC at regular intervals as required.
- ☐ Calculate efficacy in and coverage of priority groups.
- ☐ Participate in federal efforts to collect data on the effectiveness of treatment and prophylaxis, as requested.

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LOCAL HEALTH DEPARTMENTS:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Continue to promote and provide the use of annual influenza vaccine.
- ☐ Continue to promote and provide the use of pneumococcal vaccine.
- ☐ Identify, define, and quantify priority groups in local jurisdictions that should received vaccine.
- ☐ Develop a plan on how individuals in priority groups would be reached and vaccinated.
- ☐ Plan for mass administration of vaccine to priority groups.
- ☐ Educate providers, the public and other stakeholders about local health department plans for vaccination.
- ☐ Plan for the recruiting, use and training of non-licensed persons to administer vaccine.
- ☐ Participate in the development of the vaccine data management system.
- ☐ Plan for reporting of vaccine adverse events.
- ☐ Consider including the following personnel in dispensing operations: mental health professionals, interpreters, and special needs specialists.

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Work with DHMH and health care partners to distribute, deliver, administer, and track pandemic vaccine to priority groups.
- ☐ Distribute information about changes in the prioritization guidelines, viral susceptibility, resistance, or supply as available.
- ☐ Phase-in vaccination administration for the rest of the population after priority groups have been exhausted.
- ☐ Collect reports on adverse events from providers and patients, and provide the information to DHMH.
- ☐ Conduct adverse event case investigations.

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- ☐ ☐ Update health care partners on new adverse events or updates on the adverse event profile.
- ☐ ☐ Participate in active surveillance of pandemic influenza cases as needed.

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5. ANTIVIRAL PROCUREMENT, DISTRIBUTION AND USE

I. Overview

The Department of Health and Human Services (DHHS) and the National Vaccine Advisory Committee (NVAC), in cooperation with the CDC and the Advisory Committee on Vaccine Practices (ACIP), have begun work to provide guidance on prioritization during a pandemic. The categories that have been specified are included in this plan (Appendix 5). Any priority groups established during the interpandemic period will have to be reassessed, and likely altered, as epidemiologic data on the specific pandemic virus becomes available.

Maryland has developed the following population based antiviral distribution plan for the State. The population based allocation methodology and formula for the distribution of antiviral medication is shown below.

II. Allocation and Distribution

Antiviral medications will be distributed to the following Priority Groups per federal guidance:

- Group 1 – Patients admitted to Hospitals
- Group 2– Health care workers with direct patient contact and emergency medical providers.
- Group 3– Highest risk outpatients – Immuno-compromised persons and pregnant women.
- Group 4– Pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision – makers.
- Group 5- Increased risk outpatients – young children 12-23 month old, persons > 65 years old, and persons with underlying medical conditions.
- Group 6 Outbreak response in nursing homes and other residential settings.

Maryland Department of Health and Mental Hygiene is actively engaged with local health departments in the collection of data of estimated group populations by jurisdictions.

III. Antiviral Medication Adverse Event Monitoring and Reporting

Adverse events associated with antiviral drug use inevitably will occur. Serious adverse events associated with the use of antiviral influenza drugs should be reported to the FDA,

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using the Med Watch monitoring program. MedWatch forms are available at <http://www.fda.gov/medwatch/>. Adverse events reported to Med Watch are collated and analyzed by the FDA's Adverse Events Reporting System (AERS).

B. Antiviral Drug Resistance

CDC will work with state and local partners to monitor the development of resistance to antivirals. Because resistance to adamantanes (amantadine and rimantadine) may involve a single base pair change, resistance may develop rapidly if these drugs are used widely. Information about antiviral resistance can be found in the July 2005 recommendations of the ACIP at <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>. Surveillance for antiviral resistance may be particularly important during the later stages of the pandemic, especially if adamantanes have been widely used. Under these circumstances, the detection of widespread adamantane resistance might require a re-evaluation of priorities for prophylaxis and treatment.

CDC will test the drug susceptibilities of viruses isolated from different age groups and geographic areas over the course of the pandemic. DHMH will encourage LHDs and clinicians to obtain specimens from patients who develop severe disease while receiving treatment or prophylaxis.

IV. Inventory of Material Handling Equipment

Material handling equipment is available at the RSS and has been documented in the Strategic National Stockpile (SNS) Program Preparedness Branch, RSS Facility Checklist dated December 7, 2006. An inventory list of office materials and supplies has been put compiled and is part of the Maryland Strategic National Stockpile Plan. The following material handling equipment was identified and made available:

- ☐ 20 Propane fueled forklifts
- ☐ 10 Pallet jacks
- ☐ 12 Hand trucks

V. Security Plans

Maryland was given credit for providing; reviewing and maintaining security plans for local points of distribution (PODs) during the most recent Division of Strategic National Stockpile Technical Assistance Review conducted September 25, 2007. The Security Survey Templates were developed by the United States Marshal's Service, Office of Emergency Management and forwarded to the Local Health Departments on April 30, 2007. All jurisdictions have completed these surveys and they are on file with the Strategic National Stockpile Coordinator.

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VI. Activities by Pandemic Period

STATE HEALTH DEPARTMENT:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Identify a process for reviewing national recommendations for pandemic antiviral use, and for developing state specific modifications or refinements in priority groups.
- ☐ Develop specific definitions for priority groups identifying occupational categories and sub-categories.
- ☐ Plan for mass distribution of antivirals to priority groups.
- ☐ Develop a plan on how persons in priority groups would be identified and how antivirals would be most efficiently provided to those groups.
- ☐ Develop a plan to provide antivirals to the remainder of the population after priority groups have been exhausted.
- ☐ Educate stakeholders and the public about the need for priority groups and the rationale for the groups recommended.
- ☐ Provide information to health professionals and the public on issues related to availability and use of antivirals during an influenza pandemic.
- ☐ Plan for the use and training of non-licensed persons to administer antivirals.

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Work with LHDs and health care partners to distribute, deliver, administer, and track antivirals to priority groups.
- ☐ Track antiviral agent supply in the state and redistribute as needed.
- ☐ Work with LHDs to disseminate public health guidance that encourages antiviral drug-use practices that help minimize the development of drug resistance.
- ☐ Revise the strategies for the use of antivirals as the pandemic progresses, depending on supplies, on what is learned about the pandemic strain, susceptibility of the pandemic strain, and on when a vaccine becomes available.

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- ☐ In conjunction with CDC, authorize the use of antivirals to treat and control the spread of disease from individuals, if cases of novel influenza should occur in the U.S.
- ☐ If approved by CDC authorize the tracing of and use of antivirals to prophylax close contacts of persons with novel influenza. (As the pandemic becomes more widespread it will no longer be practical or useful to prophylax against outbreaks.)
- ☐ Communicate updates in the guidelines for appropriate use of antivirals as the pandemic continues.
- ☐ Continue to review and revise priority groups, and communicate changes and their rationale to LHDs and health care partners.
- ☐ Phase-in use of antivirals for the rest of the population after priority groups have been exhausted.
- ☐ Collect antiviral resistance data from LHDs and providers.
- ☐ Consult with CDC on adverse events as needed.
- ☐ Report all adverse events to MedWatch.
- ☐ Update LHDs and providers on any new adverse events identified or any updates on the adverse event profile.
- ☐ Conduct active surveillance and reporting of adverse events, as needed.
- ☐ Provided guidance to LHDs for case investigation of adverse events.
- ☐ Work with CDC to monitor the development of antiviral resistance.
- ☐ Provide technical assistance to LHDs.
- ☐ Collect data from LHDs on antiviral efficacy and coverage and transmit to CDC at regular intervals as required.
- ☐ Calculate efficacy in and coverage of priority groups.
- ☐ Participate in federal efforts to collect data on the effectiveness of treatment and prophylaxis, as requested.
- ☐ Participate in federal efforts to collect data on the development of drug resistance, as requested.

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LOCAL HEALTH DEPARTMENTS:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Continue to promote and provide the use of annual influenza vaccine.
- ☐ Continue to promote and provide the use of pneumococcal vaccine.
- ☐ Continue the use of antivirals to control outbreaks in hospitals and long-term care facilities.
- ☐ Identify, define, and quantify priority groups in local jurisdictions that should receive antivirals.
- ☐ Plan for mass administration of antivirals to priority groups.
- ☐ Plan for the recruiting, use and training of non-licensed persons to administer vaccine and antivirals.
- ☐ Plan for reporting of antiviral adverse events.
- ☐ Consider including the following personnel in dispensing operations: mental health professionals, interpreters, and special needs specialists.

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Work with DHMH and health care partners to distribute, deliver, administer, and track antivirals to priority groups.
- ☐ Track antiviral supply in the local jurisdiction and redistribute as needed.
- ☐ Work with health care providers to disseminate public health guidance that encourages antiviral drug-use practices that help minimize the development of drug resistance.
- ☐ Administer antivirals to control the spread of disease in small cluster outbreaks or outbreaks in contained settings, if indicated by DHMH.
- ☐ Trace and prophylax close contacts of confirmed cases, if indicated by DHMH.
- ☐ Distribute information about changes in the prioritization guidelines, viral susceptibility, resistance, or supply as available.

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- ☐ Communicate updates in the guidelines for appropriate use of antivirals as the pandemic continues.
- ☐ Phase-in antiviral administration for the rest of the population after priority groups have been exhausted.
- ☐ Collect reports on adverse events from providers and patients, and provide the information to DHMH.
- ☐ Conduct adverse event case investigations.
- ☐ Update health care partners on new adverse events or antiviral drug resistance or updates on the adverse event profile.
- ☐ Participate in active surveillance of pandemic influenza cases as needed.

6. CONTINUITY OF OPERATIONS (COOP)

I. Overview

During an influenza pandemic, special planning is needed to ensure that hospitals, public health agencies, first-responder organizations and employers of essential service workers maximize personal resilience and professional performance.

An essential part of this planning effort involves the creation of alliances with community-based organizations and nongovernmental organizations with expertise in and resources for psychosocial support services or training.

In addition, the *DHMH Continuity of Operations Plan* will include contingency planning for increasing the public health workforce in response to absenteeism among health department staff and stakeholder groups that have key responsibilities under a community's response plan.

II. Activities by Pandemic Period

STATE AND LOCAL HEALTH DEPARTMENTS:

Interpandemic and Pandemic Alert Periods: WHO Phases 1-5 / Federal Stages 0-2

- ☐ Prepare or obtain workforce support materials on psychosocial issues for distribution to employees during an influenza pandemic. Include materials on:
 - stressors related to pandemic influenza;
 - signs of distress;
 - traumatic grief;
 - psychosocial aspects related to management of mass fatalities;
 - stress management and coping strategies;
 - strategies for building and sustaining personal resilience;
 - behavioral and psychological support services;
 - strategies for helping children and families in times of crisis;
 - strategies for working with highly agitated patients;
 - developing “family communication plans”;
 - services available during an emergency;
 - measures that persons can take to protect themselves and their families.
- ☐ Identify resources that can be made available to employers and their families during and after a pandemic.
- ☐ Develop or identify a workforce resilience program that can help deployed workers prepare for, cope with, and recover from the social and psychological challenges in emergency field work. Components of this program could include:
 - conduct briefings and training on behavioral health, resilience, stress management issues, and coping skills;
 - train supervisors in strategies for maintaining a supportive work environment;

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- deploy several persons as a team;
- monitor occupational health, safety and psychological well-being of deployed staff;
- provide access to activities that help reduce stress;
- refer to behavioral health services upon request;
- continue to provide outreach to employees' families to address ongoing psychological and social issues;
- interview responders and family members to assess lessons learned;
- provide ongoing access to post-emergency psychosocial support services for responders and their families;
- conduct an ongoing evaluation of the after-effects of the pandemic on employees' health, morale and productivity.

Pandemic Period: WHO Phase 6/Federal Stages 3-6

- ☐ Provide psychosocial support services to staff that participate in or provide support for the response to a pandemic.
- ☐ Facilitate psychosocial support resources to the public, particularly those who require isolation or quarantine (for more information, see: Maryland Isolation and Quarantine Guidelines).

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RECOVERY

The goal of the recovery process is to resume normal operations and activities, as they were before the pandemic began.

Recovery from a pandemic influenza response may pose challenges that recovery efforts for other incidents and emergencies may not. Since the response to pandemic influenza will be a long process and may continue through several waves spanning many months, the recovery process will be extensive. The initial recovery phase may also be complicated by the need to continue preparedness activities in order to be ready to respond to subsequent pandemic waves. Thus, recovery will be an ongoing process.

A major part of the recovery process will be dealing with the impacts of influenza-related deaths. The need for psychosocial support and mental health needs will be significant, since most people will have either suffered from illness themselves or lost family members, friends, and co-workers to pandemic influenza. Therefore, in addition to recovery activities that are required after any emergency, recovery from pandemic influenza will require considerable resources devoted to psychological needs.

DHMH responsibilities in the recovery effort:

- Plan for the possibility of additional pandemic waves
- Assess damage to public health and healthcare systems and develop a phased recovery plan
- Ensure continuity and/or recovery of essential services
- Assess staffing needs and the capacity of staff to return to normal operations
- Use enhanced surveillance to assist in identifying phases of recovery including the initial, intermediate (which may be prolonged), and final phase of returning to normal levels.
- Remove community containment measures, including social distancing, school and business closings, etc., that may have been put in place during the pandemic
- Assist in closing alternate care sites that may have been used during the pandemic
- Provide mental health and psycho-social support services to staff
- Submit financial expenditure documentation and forms to obtain reimbursements from federal government
- Develop a plan to replace depleted supplies and stockpiles
- Evaluate the overall response to the pandemic
- Make improvements and revisions to the plans based on evaluation and lessons learned

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TRAINING, EXERCISES & EVALUATION

TRAINING

Response Training

The response to a public health emergency will require both routine and specialized emergency operations, often in an area potentially contaminated with hazardous materials. Therefore, it is vitally important to assure that response personnel are adequately trained to fulfill their responsibilities without endangering their safety and the safety of others. This includes training emergency services and health care personnel to recognize a possible terrorist event, as well as training those who would respond to that event. The Office of Preparedness and Response is responsible for developing and coordinating emergency preparedness training activities for DHMH personnel.

In an emergency, the Office of Preparedness and Response will identify existing, readily available training and refresher courses for public health and health care providers that address the particular event. These resources may be web-based, [available on the Learning Management System (LMS)] written, CD ROM, DVD or available through satellite broadcast. DHMH will provide broad distribution of the available resource or in the case of a satellite broadcast, and will coordinate the broadcast to all available satellite sites as appropriate.

The resources utilized will include the DHMH Library of cataloged learning resources in a variety of formats including videotape, CD ROMs and DVDs. Topics are organized in an access database searchable by subject and other fields. Self-study manuals will also be available.

The Office of Preparedness and Response also sponsors the following resources for staff training and development:

Website

The Office of Preparedness and Response's website houses emergency preparedness information for both the general public and health care professionals including, biological threats, [Pandemic Influenza \(Pan Flu\)](#), [Hospital Preparedness](#), [Cities Readiness Initiative \(CRI\)](#), [Strategic National Stockpile \(SNS\)](#), and other related programs and websites.

Learning Management System (LMS)

The Office of Preparedness and Response hosts a Learning Management System (LMS) that provides access to public health and emergency preparedness related courses and events. This system has been established to build competencies in the area of emergency preparedness and response and provide just-in-time training for key personnel in the event of an emergency. Our partners and personnel have access to complete any available course within the LMS, and designated or approved course providers can contribute

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related trainings. By this, we hope to build a wealth of information and partner with subject matter experts in the area of emergency preparedness and response.

Public Health Response Training (PHRT)

The Office of Preparedness and Response offers multi-level response training, through a 3-part series called, Public Health Response Training (PHRT). PHRT is divided into a basic, intermediate, and advanced course to equip specialized personnel in emergency-related response. The courses vary based on the level at which key personnel are expected to function during an emergency: aware, knowledgeable, and advanced.

The Office of Preparedness and Response Annual Update

The Office of Preparedness and Response hosts an annual emergency preparedness update, which allows our office, partners, and other key figures within the community to share what they are doing in the subject matter. Each year, we invite the local health departments to participate and share their efforts throughout the year.

Incident Command System (ICS)/National Incident Management System (NIMS)

The Office of Preparedness and Response staff is expected to be knowledgeable about the ICS/NIMS structure, in preparation for emergency response, through documented completion of the following courses:

Minimum Requirement

- ICS 100
- ICS 200
- ICS 700
- ICS 800

Recommended – (Required for selected individuals)

- ICS 300
- ICS 400

Personal Protective Equipment (PPE) Training

The office of Preparedness and Response are expected to be familiar with the different types of PPE's to be used in the event of pandemic. OP&R staff are also expected to know how to properly fit all equipment to maximize effectiveness.

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PLAN EXERCISES

All Pandemic Influenza exercises shall be exercised annually in collaboration, where possible, with other local, state, and federal preparedness partners. The exercise type will vary between table-top, functional, and full-scale. The exercise will bring statewide preparedness partners together representing several dimensions of a health and medical response.

All Pandemic Influenza exercises shall be planned by following the guidelines of Homeland Security Exercise and Evaluation Program (HSEEP). All Pandemic Influenza exercises must include by-in from the appropriate jurisdictions/agencies, senior officials, and other local/state/federal preparedness partners. All exercises must also include a project management timeline, activity milestones, and an exercise planning team.

All Pandemic Influenza exercises shall assess, address, and evaluate a number of health and medical initiatives in Maryland including, but not limited to:

- Hospital readiness for pandemic influenza.
- Disaster modification resulting from increased patients (Health & Medical Surge)
- Alternate healthcare disaster configuration for all hazards
- Alternate site delivery of Patient Surge
- Internal medication dissemination (a Point of Dispensing evaluation)
- Community Emergency Response Team use as a neighborhood epidemiological data gathering and service delivery component (Window Needs Assessment)
- Isolation and Quarantine practice with emphasis on Home Quarantine
- Sheltering-in-Place
- Enhanced surveillance
- Laboratory surveillance
- Communications
 - Redundancy equipment
 - Interoperability
 - WebEOC, Facility Resource Emergency Database (FRED), and Radio Amateur Civil Emergency Service (RACES), etc.
- Public information Campaign and Joint Information Center
- Regional and Federal Asset request and processing

During a Pandemic Influenza exercise, Exercise Evaluation Guides (EEGs) should be used when appropriate. EEGs provide standards for assessing objectives through the execution of tasks and activities linked to each target capability. Based on areas for improvement identified using the EEGs, After Action Reports / Improvement Plans (AARs/IPs) provide concrete steps that an entity can take to remedy deficiencies or shortcomings observed during exercises. Pandemic Influenza exercises are also an opportunity to identify unmet objectives and best practices that can be shared with other jurisdictions and organizations to help build the state's overall level of preparedness.

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EVALUATION

All Pandemic Influenza exercises shall be evaluated by using the Homeland Security Exercise and Evaluation Program (HSEEP). HSEEP provides common evaluation policy and program guidance that constitutes a national standard for Pandemic Influenza exercises. HSEEP includes consistent terminology that can be used by all exercise and evaluation planners. For more information and details on the latest HSEEP guidelines (February, 2007), please follow this link: <https://hseep.dhs.gov/support/VolumeIII.pdf>.

Exercise evaluation of any Pandemic Influenza exercise maintains a fundamental link to improvement planning because it assesses an entity's performance in an exercise and identifies strengths and areas for improvement. The exercise evaluation process will develop Improvement Plans (IPs) for areas that require it. The IPs will assign responsibility for correcting deficiencies or shortcomings observed during a given exercise. Exercise evaluation will be an integral part of this operational plan by strengthening it.

During Pandemic Influenza exercise, Exercise Evaluation Guides (EEGs) should be used when appropriate. EEGs provide standards for assessing objectives through the execution of tasks and activities linked to each target capability. Based on areas for improvement identified using the EEGs, After Action Reports / Improvement Plans (AARs/IPs) provide concrete steps that an entity can take to remedy deficiencies or shortcomings observed during exercises. Pandemic Influenza exercises are also an opportunity to identify lessons learned and best practices that can be shared with other jurisdictions and organizations to help build the state's overall preparedness.

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APPENDIX 1

DHMH Pandemic Influenza Plan Healthcare Planning Checklist

1. ___ Maintain a current roster of all active, formerly active, and other potential healthcare volunteers available for emergency healthcare services.
2. ___ Operational pandemic influenza plans have been written and exercised for hospitals, clinics, and other healthcare facilities and have been integrated with the DHMH state plan.
3. ___ A communication plan has been written that links DHMH with all (>80%) major healthcare institutions in the state for the timely, accurate exchange of critical health information in a statewide public health emergency. The plan should include healthcare providers as well as the general public.
4. ___ Healthcare facilities have developed and implemented educational and training plans for their staff that address the unique challenges that pandemic influenza will present including issues of infection control, quarantining of potentially exposed healthcare workers, PPE, etc
5. ___ Vaccination policies and procedures have been written by each institution that follows DHMH guidelines for a potential pandemic influenza vaccine.
6. ___ Each healthcare facilities has a security plan in place for a Pandemic Severity Index, Category 4 or 5 event.
7. ___ A community triage and clinical evaluation plan has been plan written and exercised in conjunction with local public health and other health and medical partners at the local level.
8. ___ Hospital internal surge plans have been developed to include minimum and critical staffing, maximum bed capacity, maintaining adequate consumable and durable supplies, and the continuation of essential medical services to special needs populations.
9. ___ A statewide mortuary plan is in place.
10. ___ Planning for alternate care sites has taken place in conjunction with public health and other healthcare partners
11. ___ Non-hospital healthcare facilities have been part of the pandemic influenza process and are ready to respond.
12. ___ Activities by Federal Government Response Stages 0-2 (WHO Inter-Pandemic and Pandemic Alert Periods) and Federal Stages 3-6 (WHO Pandemic Period) have been reviewed by key response health officials at the state and local levels.

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APPENDIX 2– RESPONSE GUIDANCE

2-1-A. CDC Updated Surveillance Criteria

CDC recommends maintaining the enhanced surveillance efforts practiced currently by state and local health departments, hospitals, and clinicians to identify patients at increased risk for avian influenza A (H5N1). Guidance for enhanced surveillance was first described in a HAN update issued on February 3, 2004 and most recently updated on February 4, 2005.

Testing for avian influenza A (H5N1) virus infection is recommended for:

A patient who has an illness that:

- ☐ Requires hospitalization or is fatal; AND
- ☐ Has or had a documented temperature of $\geq 38^{\circ}\text{C}$ ($\geq 100.4^{\circ}\text{F}$); AND
- ☐ Has radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an alternate diagnosis has not been established; AND
- ☐ Has at least one of the following potential exposures within 10 days of symptom onset:
 - A. History of travel to a country with influenza H5N1 documented in poultry, wild birds, and/or humans,[†] AND had at least one of the following potential exposures during travel:
 - Direct contact with (e.g., touching) sick or dead domestic poultry;
 - Direct contact with surfaces contaminated with poultry feces;
 - Consumption of raw or incompletely cooked poultry or poultry products;
 - Direct contact with sick or dead wild birds suspected or confirmed to have influenza H5N1;
 - Close contact (approach within 1 meter [approx. 3 feet]) of a person who was hospitalized or died due to a severe unexplained respiratory illness;
 - B. Close contact (approach within 1 meter [approx. 3 feet]) of an ill patient who was confirmed or suspected to have H5N1;
 - C. Worked with live influenza H5N1 virus in a laboratory.

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Testing for avian influenza A (H5N1) virus infection can be considered on a case-by-case basis, in consultation with local and state health departments, for:

- ☐ A patient with mild or atypical disease[‡] (hospitalized or ambulatory) who has one of the exposures listed above (criteria A, B, or C) OR
- ☐ A patient with severe or fatal respiratory disease whose epidemiological information is uncertain, unavailable, or otherwise suspicious but does not meet the criteria above (examples include: a returned traveler from an influenza H5N1-affected country whose exposures are unclear or suspicious, a person who had contact with sick or well-appearing poultry, etc.)

Clinicians should contact their local or state health department as soon as possible to report any suspected human case of influenza H5N1 in the United States.

[†] For a listing of influenza H5N1-affected countries, visit the CDC website at <http://www.cdc.gov/flu/avian/outbreaks/current.htm> the OIE website at http://www.oie.int/eng/en_index.htm and the WHO website at http://www.who.int/csr/disease/avian_influenza/en/.

[‡] For example, a patient with respiratory illness and fever who does not require hospitalization, or a patient with significant neurologic or gastrointestinal symptoms in the absence of respiratory disease.

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2-1-B. DHMH Procedure for Collection and Transport of Viral Throat Specimens for Respiratory Outbreaks

- ☐ Obtain viral throat swab kits from DHMH Laboratories Administration, Outfit Room, by calling (410) 767- 6120 or your local health department. Before using a kit, be sure to check the expiration date on the viral transport media on a regular basis.
- ☐ Complete the accompanying VIROLOGY form (DHMH-72). Be sure to include:
 - Person's first and last name.
 - Specify virus that is suspected, or for which testing is desired, on the blank line following "Virologic Test desired." Do NOT write vague instructions such as "viral culture," or "respiratory viruses." By naming the virus, you ensure that the laboratory will do the work that is desired, which will provide more meaningful results to the health care provider.
 - Outbreak number assigned by DHMH (if applicable). This should be written in the blank space of the form near the submitter information.
 - Clinical diagnosis. Note "influenza" if that is suspected as the clinical diagnosis
- ☐ Open sterile swabs provided in kit. Hold two swabs together and swab the posterior pharynx and tonsillar areas vigorously with swabs.
- ☐ Immerse swabs, tips first, in media and break off the top portion of the shaft that extends beyond the length of the tube. The entire remaining swab should fit in the tube without applying pressure to the lid when the lid is secured.

Label the specimen tube with the patient's first and last names *exactly as the name was written on the lab slip*. Federal clinical laboratory regulations require unambiguous identification on all specimens, meaning that the patient identifiers on the lab slip and tube must match. Specimens that are received with no identification on the collection tube that exactly corresponds to the identifier on the lab slip will not be tested. It is in the best interest of the patient, the health care provider, and the laboratory that all specimens sent to the laboratory be clearly and unequivocally labeled.

- ☐ Refrigerate specimens immediately after collection, and then transport them to the laboratory using cool packs to maintain a cold temperature. Alternatively, the specimen can be frozen at -70°C, which requires a specialized freezer. DO NOT freeze

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specimen in a regular, household-type freezer as this will not keep the specimen cold enough. Specimens frozen at -70°C should be shipped to the lab on dry ice. If no dry ice is available, specimens should not be frozen after collection, but should be kept cool as outlined earlier in this paragraph. Because of the mess created when it melts, do not use wet ice to keep specimens cold during transit.

☐ Note to local health departments: If facilitating the transport of viral throat specimens to DHMH Virology Laboratory, please double check specimens to ensure that all proper laboratory paperwork and corresponding tube labels have been completed.

☐ Specimens should be transported to DHMH Virology Laboratory, 201 W. Preston St, Baltimore, MD 21201.

PLEASE NOTE – Failure to follow proper procedures may render a specimen unsatisfactory for testing.

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2-1-C. DHMH Laboratory Contact Numbers

For Daily Reporting, The Contact People Are:			
Dr Jack DeBoy	1.410-767-6100	1.800.538.4186	jdeboy@dhmh.state.md.us
Dr Bob Myers	1.410-767-5772	1.800.465.6287	myersr@dhmh.state.md.us
Mr. Jim Svrjctet/Jill Santacroce	1.410.767.6096		svrjctetj@dhmh.state.md.us santacrocej@dhmh.state.md.us
F o r Emergency Calls, All Text Message Pagers:			
BT Lab emergency pager Mr. Jim Svrjctet/Jill Santacroce		1.410.471.0595	4104710595@archwireless.net
F o r Emergency Technical Review			
Dr Bob Myers	410-767-5772	1.800.465.6287	8004656287@archwireless.net

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2-1-D CDC Specimen Testing Guidelines, Updated June 2006

- Oropharyngeal swab specimens and lower respiratory tract specimens (e.g., bronchoalveolar lavage or tracheal aspirates) are preferred because they appear to contain the highest quantity of virus for influenza H5N1 detection, as determined on the basis of available data. Nasal or nasopharyngeal swab specimens are acceptable, but may contain less virus and therefore not be optimal specimens for virus detection.
- Detection of influenza H5N1 is more likely from specimens collected within the first 3 days of illness onset. If possible, serial specimens should be obtained over several days from the same patient.
- Bronchoalveolar lavage is considered to be a high-risk aerosol-generating procedure. Therefore, infection control precautions should include the use of gloves, gown, goggles or face shield, and a fit-tested respirator with an N-95 or higher rated filter. A loose-fitting powered air-purifying respirator (PAPR) may be used if fit-testing is not possible (for example, if the person has a beard). Detailed guidance on infection control precautions for health care workers caring for suspected influenza H5N1 patients is available. ||
- Swabs used for specimen collection should have a Dacron tip and an aluminum or plastic shaft. Swabs with calcium alginate or cotton tips and wooden shafts are not recommended. § Specimens should be placed at 4°C immediately after collection.
- For reverse-transcriptase polymerase chain reaction (RT-PCR) analysis, nucleic acid extraction lysis buffer can be added to specimens (for virus inactivation and RNA stabilization), after which specimens can be stored and shipped at 4°C. Otherwise, specimens should be frozen at or below -70°C and shipped on dry ice. For viral isolation, specimens can be stored and shipped at 4>°C. If specimens are not expected to be inoculated into culture within 2 days, they should be frozen at or below -70°C and shipped on dry ice. Avoid repeated freeze/thaw cycles.
- Influenza H5N1-specific RT-PCR testing conducted under Biosafety Level 2 conditions ¶ is the preferred method for diagnosis. All state public health laboratories, several local public health laboratories, and CDC are able to perform influenza H5N1 RT-PCR testing, and are the recommended sites for initial diagnosis.
- Viral culture should NOT be attempted on specimens from patients suspected to have influenza H5N1, unless conducted under Biosafety Level 3 conditions with enhancements. ¶
- Commercial rapid influenza antigen testing in the evaluation of suspected influenza H5N1 cases should be interpreted with caution. Clinicians should be

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aware that these tests have relatively low sensitivities, and a negative result would not exclude a diagnosis of influenza H5N1. In addition, a positive result does not distinguish between seasonal and avian influenza A viruses.

- Serologic testing for influenza H5N1-specific antibody, using appropriately timed specimens, can be considered if other influenza H5N1 diagnostic testing methods are unsuccessful (for example, due to delays in respiratory specimen collection). Paired serum specimens from the same patient are required for influenza H5N1 diagnosis: one sample should be tested within the first week of illness, and a second sample should be tested 2-4 weeks later. A demonstrated rise in the H5N1 -specific antibody level is required for a diagnosis of H5N1 infection. Currently, the microneutralization assay, which requires live virus, is the recommended test for measuring H5N1-specific antibody. Any work with live wild-type highly pathogenic influenza H5N1 viruses must be conducted in a USDA-approved Biosafety Level 3 enhanced containment facility. Visit <http://www.cdc.gov/flu/h2n2bsl3.htm> for more information about procedures and facilities recommended for manipulating highly pathogenic avian influenza viruses.

|| Interim recommendations for infection control in health-care facilities caring for patients with known or suspected avian influenza are available at <http://www.cdc.gov/flu/avian/professional/infect-control.htm>.

§ Specimens can be transported in viral transport media, Hanks balanced salt solution, cell culture medium, tryptose-phosphate broth, veal infusion broth, or sucrose-phosphate buffer. Transport media should be supplemented with protein, such as bovine serum albumin or gelatin, to a concentration of 0.5% to 1%. ¶ Information regarding Laboratory Biosafety Level Criteria can be found at <http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4s3.htm>.

2-1-E Novel Influenza Case Report Form



Human Influenza A (H5)

Human Influenza A (H5) Domestic Case Screening Form

CDC Case ID:

1. Reported By			
Date reported to state or local health department: / /		State/ local Assigned Case ID:	
m m d d y y y y			
Last Name:		First Name:	
State:	Affiliation:	Email:	
Phone 1:	Phone 2:	Fax:	
2. Patient Information			
City of Residence:		County:	State:
Age at onset: <input type="checkbox"/> Year(s) <input type="checkbox"/> Month(s)		Race: <i>(Choose One)</i> <input type="checkbox"/> American Indian/Alaska Native <input type="checkbox"/> White <input type="checkbox"/> Asian <input type="checkbox"/> Unknown <input type="checkbox"/> Black <input type="checkbox"/> Native Hawaiian/Other Pacific Islander	
Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female		Ethnicity: <input type="checkbox"/> Non Hispanic <input type="checkbox"/> Hispanic	
3. Optional Patient Information			
Last Name:		First Name:	
4. Signs and Symptoms			
A. Date of symptom onset: / /			
m m d d y y y y			
B. What symptoms and signs did the patient have during the course of illness? (check all that apply)			
Fever > 38° C (100.4° F)	Feverish (temperature not taken)	Conjunctivitis	
Cough	Headache	Shortness of breath	
Sore throat	Other (specify): _____		
C. Was a chest X-ray or chest CAT scan performed? <input type="checkbox"/> Yes* <input type="checkbox"/> No <input type="checkbox"/> Unknown			
If yes*, did the patient have radiographic evidence of pneumonia or respiratory distress syndrome (RDS)? <input type="checkbox"/> Yes* <input type="checkbox"/> No <input type="checkbox"/> Unknown			

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Influenza A (H5) Domestic Case Screening Form 1.0
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Epidemiologic Risk Factors

CDC Case ID:

5. Travel/Exposures					
A. In the 10 days prior to illness onset, did the patient travel to any of the countries listed in the table below? If yes*, please fill in arrival and departure dates for all countries that apply.				<input type="checkbox"/> Yes* <input type="checkbox"/> No** <input type="checkbox"/> Unknown <small>**If patient did not travel outside U.S., skip to question 6.</small>	
Country	Arrival Date	Departure Date	Country	Arrival Date	Departure Date
Afghanistan			Myanmar (Burma)		
Bangladesh			Nepal		
Brunei			North Korea		
Cambodia			Oman		
China			Pakistan		
Hong Kong			Papua New Guinea		
India			Philippines		
Indonesia			Saudi Arabia		
Iran			Singapore		
Iraq			South Korea		
Israel			Syria		
Japan			Taiwan		
Jordan			Thailand		
Laos			Turkey		
Lebanon			Viet Nam		
Macao			Yemen		
Malaysia					
<p>For the questions 5B to 5E, In the 10 days prior to illness onset, while in the countries listed above . . .</p> <p>B. Did the patient come within 1 meter (3 feet) of any live poultry or domesticated birds (e.g. visited a poultry farm, a household raising poultry, or a bird market)? <input type="checkbox"/> Yes* <input type="checkbox"/> No <input type="checkbox"/> Unknown</p> <p>If Yes*</p> <p>C. Did patient touch any recently butchered poultry? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown</p> <p>D. Did the patient visit or stay in the same household with anyone with pneumonia or severe flu-like illness? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown</p> <p>E. Did the patient visit or stay in the same household with a suspected human influenza A(H5) case?* <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown</p> <p>F. Did the patient visit or stay in the same household with a known human influenza A(H5) case?* <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown</p> <p><small>* SEE Influenza A (H5): Interim U.S. Case Definitions</small></p>					

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Influenza A (H5) Domestic Case Screening Form 1.0
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CDC ID:

6. Exposure for Non Travelers			
For patients whom did not travel outside the U.S., in the 10 days prior to illness onset, did the patient visit or stay in the same household with a traveler returning from one of the countries listed above who developed pneumonia or severe flu-like illness?	<input type="checkbox"/> Yes*	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
If yes*, was the contact a confirmed or suspected H5 case patient?	<input type="checkbox"/> Yes*	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
If yes*: CDC ID: _____ STATE ID: _____			

Laboratory Evaluation

7. State and local level influenza test results		
Specimen 1		
<input type="checkbox"/> NP swab <input type="checkbox"/> NP aspirate	<input type="checkbox"/> Broncheoalveolar lavage specimen (BAL) <input type="checkbox"/> OP swab <input type="checkbox"/> Other _____	Date Collected: _____ m m d d y y y y
Test Type: <input type="checkbox"/> RT-PCR <input type="checkbox"/> Direct fluorescent antibody (DFA) <input type="checkbox"/> Viral Culture <input type="checkbox"/> Rapid Antigen Test*		Result: Influenza A Influenza B Influenza (type unk) Negative Pending
*Name of Rapid Test:		
Specimen 2		
<input type="checkbox"/> NP swab <input type="checkbox"/> NP aspirate	<input type="checkbox"/> Broncheoalveolar lavage specimen (BAL) <input type="checkbox"/> OP swab <input type="checkbox"/> Other _____	Date Collected: _____ m m d d y y y y
Test Type: <input type="checkbox"/> RT-PCR <input type="checkbox"/> Direct fluorescent antibody (DFA) <input type="checkbox"/> Viral Culture <input type="checkbox"/> Rapid Antigen Test*		Result: Influenza A Influenza B Influenza (type unk) Negative Pending
*Name of Rapid Test:		
Specimen 3		
<input type="checkbox"/> NP swab <input type="checkbox"/> NP aspirate	<input type="checkbox"/> Broncheoalveolar lavage specimen (BAL) <input type="checkbox"/> OP swab <input type="checkbox"/> Other _____	Date Collected: _____ m m d d y y y y
Test Type: <input type="checkbox"/> RT-PCR <input type="checkbox"/> Direct fluorescent antibody (DFA) <input type="checkbox"/> Viral Culture <input type="checkbox"/> Rapid Antigen Test*		Result: Influenza A Influenza B Influenza (type unk) Negative Pending
*Name of Rapid Test:		

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Influenza A (H5) Domestic Case Screening Form 1.0
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CDC ID:

8. List specimens sent to the CDC		
Select a SOURCE* from the following list for each specimen: Serum (acute), serum (convalescent), NP swab, NP aspirate, bronchoalveolar lavage specimen (BAL), OP swab, tracheal aspirate, or tissue		
Specimen 1: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: -----	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Specimen 2: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: -----	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Specimen 3: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: -----	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Specimen 4: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: -----	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Specimen 5: <input type="checkbox"/> Clinical Material <input type="checkbox"/> Extracted RNA <input type="checkbox"/> Virus Isolate	Source*: -----	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Carrier:		Tracking #:
9. Case Notes:		

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Influenza A (H5) Domestic Case Screening Form 1.0
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CDC ID:

CDC Contact Information (FOR CDC USE ONLY)	
<p>Case status and date status applied:</p> <p>Clinical Case __ __ / __ __ / __ __ __ __ (lab results pending) m m d d y y y y</p> <p>Influenza A pos. Case __ __ / __ __ / __ __ __ __ (subtype pending) m m d d y y y y</p> <p>Confirmed Case __ __ / __ __ / __ __ __ __ m m d d y y y y</p>	<p>Ruled Out/Non-Case: __ __ / __ __ / __ __ __ __ m m d d y y y y</p> <p>Reason:</p> <p>Influenza A neg. (by PCR, viral culture, or influenza A serology)</p> <p>Non-H5 Influenza Strain</p> <p>Other etiology*</p> <p>Did not meet case definition</p>
<p>Date Entered by CDC: __ __ / __ __ / __ __ __ __ m m d d y y y y</p>	<p>Contact Date: __ __ / __ __ / __ __ __ __ m m d d y y y y</p>
<p>Name of CDC Contact:</p>	
<p>*Alternative Diagnosis</p>	
<p>A. Was an alternative non-influenza respiratory pathogen detected? <input type="checkbox"/> Yes* <input type="checkbox"/> No <input type="checkbox"/> Unknown If yes* specify:</p>	
<p>B. Was there a diagnosis other than respiratory infection? <input type="checkbox"/> Yes* <input type="checkbox"/> No <input type="checkbox"/> Unknown If yes* specify:</p>	

2-1-F Quick Reference Chart, Diagnostic Tests

QUICK REFERENCE CHART OF INFLUENZA DIAGNOSTIC TESTS¹(From: *Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP)*. MMWR 2004;53(RR-6):1–40.

Procedure	Influenza Types Detected	Acceptable Specimens	Time for Results	Rapid result available
Viral culture	A and B	nasal wash/aspirate, NP swab, 2 nasal aspirate, nasal swab and throat swab, sputum	5–10 days ²	No
Immunofluorescence Antibody Staining	A and B	nasal wash/aspirate, NP swab, 2 nasal aspirate, nasal swab and throat swab, sputum	2–4 hours	No
RT-PCR³	A and B	nasal wash/aspirate, NP swab, 2 nasal aspirate, throat swab, bronchial wash, nasal aspirate, sputum	Hours	No
Serology	A and B	paired acute/convalescent serum samples ⁶	>2 weeks	No
Rapid Diagnostic Tests				
Directigen Flu A⁷ (Becton–Dickinson)	A	NP swab, 2 throat swab, nasal wash, nasal aspirate	See insert	Yes
Directigen Flu A+B^{7,9} (Becton–Dickinson)	A and B	NP swab, 2 throat swab, nasal wash, nasal aspirate	See insert	Yes
FLU QIA⁷ (Thermo Electron)	A and B ⁸	NP swab, 2 throat swab, nasal aspirate, sputum	See insert	Yes
FLU QIA A/B^{7,9} (Thermo Electron)	A and B	NP swab, 2 throat swab, nasal aspirate, sputum	See insert	Yes
XPECT Flu A/B^{7,9} (Remel)	A and B	Nasal wash, NP swab, 2 throat swab	See insert	Yes
NOW Flu A Test^{7,9} NOW Flu B Test^{7,9} (Binax)	A B	Nasal wash, NP swab, 2 Nasal wash, NP swab, 2	See insert See insert	Yes Yes
QuickVue Influenza Test⁸ (Quidel)	A and B ⁸	NP swab, 2 nasal wash, nasal aspirate	See insert	Yes
QuickVue Influenza A+B Test⁸ (Quidel)	A and B ⁸ A	NP swab, 2 nasal wash, nasal aspirate	See insert	Yes
SAS Influenza A^{7,9} SAS Influenza B^{7,9}	B	NP wash, 2 NP aspirate ² NP wash, 2 NP aspirate ²	See insert See insert	Yes Yes
Zstat Flu⁸ (ZymeTx)	A and B ⁸	throat swab	See insert	Yes

¹ The list might not include all FDA-approved test kits.

- ² NP = nasopharyngeal
- ³ Shell-vial culture, if available, may reduce time for results to 2 days.
- ⁴ Does not distinguish between influenza A and B virus infections.
- ⁵ RT-PCR = reverse-transcription polymerase chain reaction
- ⁶ A fourfold or greater rise in antibody titer from the acute- (collected within the first week of illness) to the convalescent-phase sample (collected 2–4 weeks after the acute sample) indicates recent infection.
- ⁷ Moderately complex test that requires specific laboratory certification
- ⁸ CLIA-waived test. Can be used in any office setting. Requires a certificate of waiver or higher laboratory certification
- ⁹ Distinguishes between influenza A and B virus infections.

Disclaimer: Use of trade names or commercial sources is for identification only and does not imply endorsement by the Centers for Disease Control and Prevention or the Department of Health and Human Services.

Source: U.S. Department of Health and Human Services. HHS Pandemic Plan, November 2005

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2-1-G Influenza Diagnostic Assays

Among the several types of assays used to detect influenza, rapid antigen tests, reverse-transcription polymerase chain reaction (RT-PCR), viral isolation, immunofluorescence assays (IFA), and serology are the most commonly used. The sensitivity and specificity of any test for influenza will vary by the laboratory that performs the test, the type of test used, and the type of specimen tested. A chart that lists influenza diagnostic procedures and commercially available rapid diagnostic tests follows more detailed descriptions provided below.

□ Virus Isolation

o Biocontainment level: Interpandemic and Pandemic Alert Periods – BSL3 with enhancements; Pandemic Period– BSL-2

Virus isolation is a highly sensitive and very useful technique when the clinical specimens are of good quality and have been collected in a timely manner (optimally within 3 days of the start of illness). Isolation of a virus in cell culture along with the subsequent identification of the virus by immunologic or genetic techniques are standard methods for virus diagnosis. Virus isolation amplifies the amount of virus from the original specimen, making a sufficient quantity of virus available for further antigenic and genetic characterization and for drug-susceptibility testing if required. Virus isolation is considered the “gold standard” for diagnosis of influenza virus infections.

Highly pathogenic avian influenza (HPAI) viruses are BSL-3 agents. During the Interpandemic and Pandemic Alert Periods, laboratories should attempt to culture HPAI viruses—as well as other influenza viruses with pandemic potential—only under BSL-3 conditions with enhancements in order to optimally reduce the risk of a novel influenza virus subtype spreading to persons or animals. During the Pandemic Period, biocontainment of BSL-2 is appropriate to prevent laboratory-acquired infection and the virus will already be widespread.

In recent years, the use of cell lines has surpassed the use of embryonated eggs for culturing of influenza viruses, although only viruses grown in embryonated eggs are used as seed viruses for vaccine production. Because standard isolation procedures require several days to yield results, they should be used in combination with the spin-amplification shell-vial method. The results of these assays can be obtained in 24–72 hours, compared to an average of 4.5 days using standard culture techniques. Spin-amplification should not be performed using 24-well plates because of increased risk of cross-contamination. The most

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effective combination of cell lines recommended for public health laboratories is primary rhesus monkey for standard culture, along with Madin Darby Canine Kidney (MDCK) in shell vial.⁽¹⁾ The use of these two cell lines in combination has demonstrated maximum sensitivity over time for recovery of evolving influenza strains. Some clinical laboratories have recently reported good isolation rates using commercially available cell-line mixed-cell combinations; however, data are lacking on the performance of these mixed cells with new subtypes of Influenza A viruses.

Appropriate clinical specimens for virus isolation include nasal washes, nasopharyngeal aspirates, nasopharyngeal and throat swabs, tracheal aspirates, and bronchoalveolar lavage. Ideally, specimens should be collected within 72 hours of the onset of illness.

Viral culture isolates are used to provide specific information regarding circulating influenza subtypes and strains. This information is needed to compare current circulating influenza strains with vaccine strains, to guide decisions on influenza treatment and chemoprophylaxis, and to select vaccine strains for the coming year. Virus isolates also are needed to monitor HHS Pandemic Influenza Plan the emergence of antiviral resistance and of novel influenza A subtypes that might pose a pandemic threat. During outbreaks of influenza-like illness, viral culture may help identify other causes of illness when influenza is not the etiology (except when using MDCK cells or the MDCK shell-vial technique).

□ Immunofluorescence Assays

o Biocontainment level: BSL-2 when performed directly on clinical specimens; if used on cultures for earlier detection of virus, biocontainment recommendations for viral culture apply

Direct (DFA) or indirect (IFA) immunofluorescence antibody staining of virus-infected cells is a rapid and sensitive method for diagnosis of influenza and other viral infections. DFA and IFA can also be used to type and subtype influenza viruses using commercially available monoclonal antibodies specific for the influenza virus HA. The sensitivity of these methods is greatly influenced by the quality of the isolate, the specificity of the reagents used, and the experience of the person(s) performing, reading, and interpreting the test.

¹ The shell-vial technique is described in: *Manual of Clinical Virology*, 3rd edition. Steven Specter, Richard Hodinka, and Stephen Young, eds. ASM Press, 2000.

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Although IFA can be used to stain smears of clinical specimens directly, when rapid diagnosis is needed it is preferable to first increase the amount of virus through growth in cell culture. For HPAI isolates, attempts to culture the virus should be made only under BSL-3 conditions with enhancements.

□ **Reverse-Transcription Polymerase Chain Reaction (RT-PCR)**

o **Biocontainment level: BSL-2**

PCR can be used for rapid detection and subtyping of influenza viruses in respiratory specimens. Because the influenza genome consists of single-stranded RNA, a complementary DNA (cDNA) copy of the viral RNA must be synthesized using the reverse-transcriptase (RT) enzyme prior to the PCR reaction.

Laboratories can obtain CDC protocols and sequences of primers and probes for rapid RT-PCR detection of human and avian HA subtypes of current concern at the APHL website (available for members only). These protocols use real-time RT-PCR methods with fluorescent-labeled primers that allow automatic, semi-quantitative estimation of the input template. The RT-PCR results are analyzed and archived electronically, without the need for gel electrophoresis and photographic recording. A large number of samples may be analyzed at the same time, reducing the risk of carry-over contamination.

As with all PCR assays, interpretation of real-time RT-PCR tests must account for the possibility of false-negative and false-positive results. False-negative results can arise from poor sample collection or degradation of the viral RNA during shipping or storage. Application of appropriate assay controls that identify poor-quality samples (e.g., an extraction control and, if possible, an inhibition control) can help avoid most false-negative results. (2)

The most common cause of false-positive results is contamination with previously amplified DNA. The use of real-time RT-PCR helps mitigate this problem by operating as a contained system. A more difficult problem is the cross-contamination that can occur between specimens during collection, shipping, and aliquoting in the laboratory. Use of multiple negative control samples in each assay and a well-designed plan for confirmatory testing can help ensure that laboratory contamination is detected and that negative specimens are not inappropriately identified as influenza-positive.

2 CDC is working with the private sector to provide inactivated RNA virus for use as RT-PCR controls for influenza A (H5) testing in LRN laboratories. CDC is working with USDA to resolve any permit issues that might affect the ability of LRN members to use these controls.

Specimens that test positive for a novel subtype of influenza virus should be forwarded to CDC for confirmatory testing. (Due to the possibility of contamination, it is important to

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provide original clinical material.) All laboratory results should be interpreted in the context of the clinical and epidemiologic information available on the patient.

□ **Rapid Diagnostic Tests**

○ **Biocontainment level: BSL-2**

Commercial rapid diagnostic tests can be used in outpatient settings to detect influenza viruses within 30 minutes. These rapid tests differ in the types of influenza viruses they can detect and in their ability to distinguish among influenza types. Different tests can 1) detect influenza A viruses only (including avian strains); 2) detect both influenza A and B viruses, without distinguishing between them; or 3) detect both influenza A and B viruses and distinguish between them.

The types of specimens acceptable for use (i.e., nasal wash/aspirate, nasopharyngeal swab, or nasal swab and throat swab) also vary by test. The specificity and, in particular, the sensitivity of rapid tests are lower than for viral culture and vary by test and specimen tested. The majority of rapid tests are >70% sensitive and >90% specific. Thus, as many as 30% of samples that would be positive for influenza by viral culture may give a negative rapid test result with these assays.

When interpreting results of a rapid influenza test, physicians should consider the level of influenza activity in the community. When influenza prevalence is low, positive rapid test results should be independently confirmed by culture or RT-PCR. When influenza is known to be circulating, clinicians should consider confirming negative tests with viral culture or other means because of the lower sensitivity of the rapid tests. Package inserts and the laboratory performing the test should be consulted for more details regarding use of rapid diagnostic tests. Additional information on diagnostic testing is provided at: <http://www.cdc.gov/flu/professionals/labdiagnosis.htm>. Detailed information on the use of rapid diagnostics tests is provided in Appendix 2-I.

□ **Serologic Tests (3)**

Hemagglutination Inhibition (HAI)

○ **Biocontainment level: BSL-2**

Serologic testing can be used to identify recent infections with influenza viruses. It can be used when the direct identification of influenza viruses is not feasible or possible (e.g., because clinical specimens for virus isolation cannot be obtained, cases are identified after shedding of virus has stopped, or the laboratory does not have the resources or staff to perform virus isolation).

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Since most human sera contain antibodies to influenza viruses, serologic diagnosis requires demonstration of a four-fold or greater rise in antibody titer using paired acute and convalescent serum samples. HAI is the preferred diagnostic test for determining antibody rises. In general, acute-phase sera should be collected within one week of illness onset, and convalescent sera should be collected 2–3 weeks later.

There are two exceptions in which the collection of single serum samples can be helpful in the diagnosis of influenza. In investigations of outbreaks due to novel viruses, testing of single serum samples has been used to identify antibody to the novel virus. In other outbreak investigations, antibody test results from single specimens collected from persons in the convalescent phase of illness have been compared with results either from age-matched persons in the acute phase of illness or from non-ill controls. In such situations, the geometric mean titers between the two groups to a single influenza virus type or subtype can be compared. In general, these approaches are not optimal, and paired sera should be collected whenever possible.

Because HAI titers of antibodies in humans infected with avian influenza viruses are usually very low or even undetectable, more sensitive serologic tests, such as microneutralization, may be needed.

³ Enzyme-linked immunoassay (EIA) is not included on this list because of non-specificity issues. Complement fixation is not included because it is currently out of use.

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□ **Microneutralization Assay**

○ **Biocontainment level: Interpandemic and Pandemic Alert Periods – BSL3 with enhancements; Pandemic Period– BSL-2**

The virus neutralization test is a highly sensitive and specific assay for detecting virus-specific antibody in animals and humans. The neutralization test is performed in two steps: 1) a virus-antibody reaction step, in which the virus is mixed with antibody reagents, and 2) an inoculation step, in which the mixture is inoculated into a host system (e.g. cell cultures, embryonated eggs, or animals). The absence of infectivity constitutes a positive neutralization reaction and indicates the presence of virus-specific antibodies in human or animal sera.

The virus neutralization test gives the most precise answer to the question of whether or not a person has antibodies that can neutralize the infectivity of a given virus strain. The neutralization test has several additional advantages for detecting antibody to influenza virus. First, the assay primarily detects antibodies to the influenza virus HA and thus can identify functional, strain-specific antibodies in animal and human serum. Second, since infectious virus is used, the assay can be developed quickly upon recognition of a novel virus and before suitable purified viral proteins become available for use in other assays.

The microneutralization test is a sensitive and specific assay for detecting virus-specific antibody to avian influenza A (H5N1) in human serum and potentially for detecting antibody to other avian subtypes. Microneutralization can detect H5-specific antibody in human serum at titers that cannot be detected by HAI. Because antibody to avian influenza subtypes is presumably low or absent in most human populations, single serum samples can be used to screen for the prevalence of antibody to avian viruses. However, if infection of humans with avian viruses is suspected, the testing of paired acute and convalescent sera in the microneutralization test would provide a more definitive answer regarding the occurrence of infection. Conventional neutralization tests for influenza viruses based on the inhibition of cytopathogenic effect (CPE)-formation in MDCK cell cultures are laborious and rather slow, but in combination with rapid culture assay principles the neutralization test can yield results within 2 days. For HPAI viruses, neutralization tests should be performed at BSL-3 enhanced conditions.

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2-1-H Reference Testing Guidelines for Potential Pandemic Strains of Influenza

State and local laboratories may conduct initial testing on patient specimens for influenza A or potential highly pathogenic strains, if laboratory capacity is available. Due to the spread of avian influenza A (H5N1) in poultry in Asia, laboratories should be on the alert for avian and human H5 viruses. Procedures for diagnosis of human cases of influenza A (H5N1) are provided in Appendix 2-A. Influenza A viruses other than currently circulating H1 and H3 subtypes should also be considered as potentially pandemic if detected in humans.

State and local laboratories should send specimens to CDC if:

- ☐ A sample tested by the state or local laboratory is positive for H5 or another novel subtype; OR

NOTE: A laboratory should test for influenza A (H5) only if it is able to do so by PCR or has a BSL-3 -enhanced facility for influenza A(H5) viral culture.

- ☐ A sample from a patient who meets the clinical and epidemiologic criteria for possible infection with a potentially pandemic virus is positive for influenza A by RT-PCR or rapid antigen detection, is negative for influenza A(H1) and A(H3), and the referring jurisdiction is not equipped to test for specific strains; OR
- ☐ The referring jurisdiction is not equipped to test samples for novel influenza viruses by RT-PCR and is requesting testing at CDC.

Shipping procedures for potential pandemic strains of influenza are provided in Appendix 2-B.

Because the sensitivity of commercially available rapid diagnostic tests for influenza may not always be optimal, CDC will also accept specimens taken from persons who meet the clinical and epidemiological criteria even if they test negative by influenza rapid diagnostic testing—if PCR assays are not available at the state laboratory.

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2-1-I Laboratory Biosafety Guidelines

HANDLING AND PROCESSING SPECIMENS OR ISOLATES OF NOVEL INFLUENZA STRAINS

Key Guidance

- Commercial antigen detection testing for influenza may be conducted under BSL2 containment conditions if a Class II biological safety cabinet is used.
- Clinical specimens from suspected novel influenza cases may be tested by RTPCR using standard BSL-2 work practices in a Class II biological safety cabinet for initial processing of patient specimens.
- If a specimen is confirmed positive for influenza A (H5N1) by RT-PCR, additional testing should be performed only under BSL-3 conditions with enhancements. CDC's Influenza Branch should be informed immediately by DHMH through the CDC Director's Emergency Operations Center (DEOC) at 770-488-7100.
- A detailed description of recommended facilities, practices, and protective equipment for the various laboratory biosafety levels can be found in the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories (BMBL) manual at www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm
- BSL-3 with enhancements and Animal Biosafety Level 3 include: all BSL-3 practices, procedures, and facilities, plus the use of negative-pressure, HEPAfiltered respirators or positive air-purifying respirators, and clothing change and personal showering protocols. Additional practices and/or restrictions may be added as conditions of USDA-APHIS permits. Registration of personnel and facilities with the Select Agent Program is required for work with highly pathogenic avian influenza (HPAI) viruses, which are classified as agricultural select agents.
- State and local public health laboratories may test clinical specimens from suspected novel influenza cases by RT-PCR using standard BSL-2 work practices in a Class II biological safety cabinet. Commercial rapid antigen detection testing may also be conducted under BSL-2 biocontainment conditions.
- Highly pathogenic avian influenza A (H5) and A (H7) viruses are classified as select agents. USDA regulations require that these viruses (as well as exotic low pathogenic avian influenza viruses) be handled under BSL-3 laboratory containment conditions, with enhancements (i.e., controlled-access double-door entry with change room and shower, use of respirators, decontamination of all

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wastes, and showering of all personnel). Laboratories that work with these viruses must be certified by USDA.

- Laboratories should not perform virus isolation on respiratory specimens from patients who may be infected with an avian influenza virus unless stringent BSL-3 enhanced containment conditions can be met and diagnostic work can be kept separate from studies with other human influenza A viruses (i.e., H1 or H3). Therefore, respiratory virus cultures should not be performed in most clinical laboratories. Cultures for patients suspected of having influenza A (H5N1) infection should be sent only to state laboratories with appropriate BSL-3 with enhancement containment facilities or to CDC.

2-1- J Rapid Diagnostic Testing for Influenza

The following information in this appendix is designed to assist clinicians and clinical laboratory directors in the use of rapid diagnostic tests during interpandemic influenza seasons. During an influenza pandemic, one or more of these tests may be sensitive and specific enough to be used by clinicians to supplement clinical diagnoses of pandemic influenza. However, clinicians should be reminded that a negative test result might not rule out pandemic influenza and should not affect patient management or infection control decisions.

I. INFORMATION FOR CLINICIANS

A. Background

Rapid diagnostic tests for influenza can help in the diagnosis and management of patients who present with signs and symptoms compatible with influenza. They also are useful for helping to determine whether institutional outbreaks of respiratory disease might be due to influenza. In general, rapid diagnostic testing for influenza should be done when the results will affect a clinical decision. Rapid diagnostic testing can provide results within 30 minutes.

B. Reliability and interpretation of rapid test results

The reliability of rapid diagnostic tests depends largely on the conditions under which they are used. Understanding some basic considerations can minimize being misled by false-positive or false-negative results. Median sensitivities of rapid diagnostic tests are generally ~70%–75% when compared with viral culture, but median specificities of rapid diagnostic tests for influenza are approximately 90%–95%. False-positive (and true negative) results are more likely to occur when disease prevalence in the community is low, which is generally at the beginning and end of the influenza season. False-negative (and true positive) results are more likely to occur when disease prevalence is high in the community, which is typically at the height of the influenza season.

C. Minimizing the occurrence of false results

- ☐ Use rapid diagnostic tests that have high sensitivity and specificity.
- ☐ Collect specimens as early in the illness as possible (within 4–5 days of symptom onset).
- ☐ Follow the manufacturer's instructions, including those for handling of specimens.
- ☐ Consider sending specimens for viral culture when:

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- Community prevalence of influenza is low and the rapid diagnostic test result is positive, or
- Disease prevalence is high but the rapid diagnostic test result is negative. (Contact your DHMH for information about influenza activity.)

D. For further information

- Information about influenza is available at the CDC influenza website (www.cdc.gov/flu) or from the CDC Flu Information Line (800-CDC-INFO [English and Spanish]; 800-243-7889 [TTY]).
- For more information about influenza diagnostics, contact your state laboratory or state health department (<http://www.cdc.gov/other.htm#states>).
- Additional resources:
 - Association of Public Health Laboratories: http://www.aphl.org/Public_Health_Labs/index.cfm
 - Weekly U.S. influenza activity reports: <http://www.cdc.gov/flu/weekly/fluactivity.htm>
 - CDC Clinician Outreach and Communication Activity: <http://www.bt.cdc.gov/coca/index.asp>
 - CDC website: <http://www.cdc.gov/flu/professionals/labdiagnosis.htm>

II. INFORMATION FOR CLINICAL LABORATORY DIRECTORS

A. Background

Rapid diagnostic tests for influenza are screening tests for influenza virus infection; they can provide results within 30 minutes. The use of commercial influenza rapid diagnostic tests by laboratories and clinics has increased substantially in recent years. At least ten rapid influenza tests have been approved by the U.S. Food and Drug Administration (FDA) (see Appendix 2-E).

Rapid tests differ in some important respects. Some can identify influenza A and B viruses and distinguish between them; some can identify influenza A and B viruses but cannot distinguish between them. Some tests are waived from requirements under the Clinical Laboratory Improvement Amendments of 1988 (CLIA). Most tests can be used with a variety of specimen types, but sensitivity and specificity can vary with specimen type. FDA approval is based upon specific specimen types.

Rapid tests vary in terms of sensitivity and specificity when compared with viral culture. Product insert information and research publications indicate that median sensitivities are approximately 70%–75% and median specificities are approximately 90%–95%.

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Specimens to be used with rapid tests generally should be collected as close as possible to the start of symptoms and usually no more than 4–5 days later in adults. In very young children, influenza viruses can be shed for longer periods; therefore, in some instances, testing for a few days after this period may still be useful. Test sensitivity will be greatest in children, who generally have higher viral titers, if the specimen is obtained during the first 2 days of illness, and if the clinician or laboratory has more experience performing the test. The quality of the specimen tested also is critical for test sensitivity.

B. Accuracy depends on disease prevalence

The positive and negative predictive values of rapid tests vary considerably depending on the prevalence of influenza in the community. False-positive (and true negative) influenza test results are more likely to occur when disease prevalence is low, which is generally at the beginning and end of the influenza season. False-negative (and true positive) influenza test results are more likely to occur when disease prevalence is high, which is typically at the height of the influenza season.

Clinical considerations when influenza prevalence is low

When disease prevalence is low, the positive-predictive value (PPV) is low and false-positive test results are more likely. By contrast, the negative-predictive value (NPV) is high when disease prevalence is low, and negative results are more likely to be truly negative.

If flu prevalence is... and specificity is.. then PPV is... false-positive rate is...

VERY LOW (2.5%)	POOR (80%)	V. POOR (6%–12%)	V. HIGH (88%–94%)
VERY LOW (2.5%)	GOOD (98%)	POOR (39%–56%)	HIGH (44%–61%)
MODERATE (20%)	POOR (80%)	POOR (38%–56%)	HIGH (44%–62%)
MODERATE (20%)	GOOD (98%)	GOOD (86%–93%)	LOW (7%–14%)

Interpretation of positive results should take into account the clinical characteristics of the case-patient. If an important clinical decision is affected by the test result, the rapid test result should be confirmed by another test, such as viral culture or PCR.

Clinical considerations when influenza prevalence is high

When disease prevalence is relatively high, the NPV is low and false-negative test results are more likely. By contrast, when disease prevalence is high, the PPV is high and positive results are more likely to be true.

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If flu prevalence is... and sensitivity is... then NPV is... false-negative rate is...

MODERATE (20%)	POOR (50%)	MOD (86%–89%)	MOD (11%–14%)
MOD (20%)	HIGH (90%)	V. GOOD (97%–99%)	V. LOW (2%–3%)
HIGH (40%)	POOR (50%)	MOD (70%–75%)	MOD (25%–30%)
HIGH (40%)	HIGH (90%)	V. GOOD (93%–94%)	LOW (6%–7%)

Interpretation of negative results should take into account the clinical characteristics of the case-patient. If an important clinical decision is affected by the test result, the rapid test result should be confirmed by another test, such as viral culture or PCR.

C. Selecting tests

Selection of a test should take into consideration several factors, such as the types of specimens that are considered optimal for that test. Also, tests with high sensitivity and specificity will provide better positive and negative predictive values. Information about test characteristics is provided in product inserts and scientific articles and by the manufacturer.

D. Changes in recommended procedures can affect test results

Modification by the user can affect test performances and increase false-positive and/or false-negative rates. Such modifications include using specimens for which the test is not optimized or using swabs that did not come with the rapid test kit (unless recommended).

E. When are rapid diagnostic tests beneficial?

Use of rapid diagnostic tests are beneficial in these situations:

- ☐ To test cases during an outbreak of acute respiratory disease to determine if influenza is the cause, *or*
- ☐ To test selected patients during the influenza season, *or*
- ☐ In the fall or winter, to test selected patients presenting with respiratory illnesses compatible with influenza to help establish whether influenza is present in a specific population and to guide healthcare providers in diagnosing and treating respiratory illnesses.

In general, the exclusive use of rapid tests does not address the public health need for obtaining viral isolates so that influenza virus strain subtyping and characterization can be conducted to monitor antigenic and genetic changes.

During an influenza pandemic, some rapid diagnostic tests may be able to detect the pandemic strain with adequate sensitivity and specificity. Rapid tests can be used by physicians to supplement clinical diagnoses of pandemic influenza.

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Physicians should be reminded that a negative test result might not rule out influenza and should not affect patient management or infection control decisions.

F. For further information

Information on influenza diagnostics is provided on the CDC website at:

<http://www.cdc.gov/flu/professionals/labdiagnosis.htm>.

3-1. MESSAGE MAPS

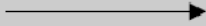
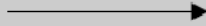
Organizations should coordinate with their Public Information Offices or Officer and develop templates for public information during a pandemic. These can be Message Maps for press conferences, press releases, statements, or fact sheets. The mission of the organization and the intended audience may require multiple means of communication and in more than one language.

Sample message maps can be found at the Department of Health and Human Services website at: www.pandemicflu.gov/rcommunication/pre_event_maps.pdf. Eight message maps developed by the Delmarva Poultry Industries Health Department Joint Task Force are included in this section.

SCENARIO: NO CASES OF H5N1 HAVE BEEN FOUND LOCALLY, BUT IT REMAINS A GLOBAL CONCERN

STAKEHOLDER: PUBLIC






QUESTION: IS IT SAFE TO EAT CHICKEN?

KEY MESSAGE 1 	KEY MESSAGE 2 	KEY MESSAGE 3
Yes, it is safe to eat chicken.	The U.S. is free of the H5N1 strain of Avian Influenza.	We are constantly monitoring farms and live bird markets for disease.

SCENARIO: A CASE OF H5N? HAS BEEN FOUND IN A DELMARVA FLOCK

STAKEHOLDER: PUBLIC






QUESTION: IS CHICKEN SAFE TO EAT?

KEY MESSAGE 1 	KEY MESSAGE 2 	KEY MESSAGE 3
Chicken is safe to eat.	An industry and government response team has been activated to handle the situation and ensure safety.	The infected flock has been kept out of the food chain.
		
Support Point 1.1	Support Point 2.1	Support Point 3.1
All flocks are tested before being processed.	Industry, state, and federal veterinarians are investigating the source and the extent of the outbreak.	The flock was humanely destroyed and disposed of.
Support Point 1.2	Support Point 2.2	Support Point 3.2
Federal inspectors continue to monitor all poultry processing.	Testing of samples of infected flock continue to determine if dangerous AI exists.	All poultry is processed under federal inspection.
Support Point 1.3	Support Point 2.3	Support Point 3.3
Stores sell only federally inspected poultry.	Poultry movement restrictions have been imposed in Delmarva.	Flocks are tested prior to processing.

SCENARIO: NO CASES OF H5N1 HAVE BEEN FOUND LOCALLY, BUT IT REMAINS A GLOBAL CONCERN

STAKEHOLDER: PRODUCER






PREMISE: ADDRESSING CONCERN OF POSSIBILITY OF H5N1 STRAIN OF AVIAN INFLUENZA ENTERING U.S.

KEY MESSAGE 1 	KEY MESSAGE 2 	KEY MESSAGE 3
The risk of finding H5N1 in flocks is low.	Effective and proven poultry protection plans are in place.	U.S. poultry industry practices greatly differ from those overseas.
		
Support Point 1.1	Support Point 2.1	Support Point 3.1
H5N1 has only appeared outside of the U.S.	We successfully limited last year's avian viral episode.	Our birds live in confined housing

SCENARIO: A CASE OF H5N¹ HAS BEEN FOUND IN A DELMARVA FLOCK

STAKEHOLDER: PRODUCERS






PREMISE: ADDRESSING CONCERN OVER ECONOMIC LOSS

KEY MESSAGE 1 	KEY MESSAGE 2 	KEY MESSAGE 3
Every effort is being made to contain the disease.	We are preparing to help you reduce economic hardships.	Everyone's cooperation is required to minimize economic loss.
		
Support Point 1.1	Support Point 2.1	Support Point 3.1
You are supported by all levels of government, universities and the poultry industry.	The cost to growers with infected flocks will be limited.	Normal activities on Delmarva will be affected.

SCENARIO: NO CASES OF H5N1 HAVE BEEN FOUND LOCALLY, BUT IT REMAINS A GLOBAL CONCERN

STAKEHOLDER: PUBLIC



QUESTION: WHAT IS MY RISK OF CONTAGION FROM CONTACT WITH LIVE BIRDS AND/OR MEAT FROM BIRDS?

KEY MESSAGE 1 	KEY MESSAGE 2 	KEY MESSAGE 3
U.S. flocks are free of H5N1	Poultry health is continually monitored.	It is safe to eat poultry.
		
Support Point 1.1	Support Point 2.1	Support Point 3.1
The system of poultry rearing in the U.S. is structured to minimize the spread of disease.	Poultry health is monitored through cooperation of federal and state government and industry.	Only disease-free birds are marketed.
Support Point 1.2	Support Point 2.2	Support Point 3.2
Biosecurity measures are in place industry-wide.	Worldwide organizations are monitoring for poultry diseases.	Viruses are killed at normal cooking temperatures.

SCENARIO: A CASE OF H5N1 HAS BEEN FOUND IN A DELMARVA FLOCK

STAKEHOLDER: PUBLIC

QUESTION: WHAT IS THE RISK OF HUMAN TO HUMAN SPREAD OF AVIAN INFLUENZA?

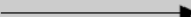
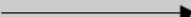



KEY MESSAGE 1 	KEY MESSAGE 2 	KEY MESSAGE 3
Human incidence of H5N1 illness is rare.	Humans in the U.S. are unlikely to come into contact with the virus.	Simple measures prevent the spread of the virus.

MESSAGE MAP
PRODUCERS ~ HUMAN HEALTH

SCENARIO: NO CASES OF H5N1 HAVE BEEN FOUND LOCALLY, BUT IT REMAINS A GLOBAL CONCERN

STAKEHOLDER: PRODUCERS






QUESTION: CAN I CATCH AVIAN INFLUENZA? WILL I GET SICK?

KEY MESSAGE 1 	KEY MESSAGE 2 	KEY MESSAGE 3
The U.S. is free of and has always been free of the H5N1 strain of Avian Influenza.	Bird to human transmission of Avian Influenza is very rare.	Your best protection is to keep Avian Influenza off of your farm.
		
Support Point 1.1	Support Point 2.1	Support Point 3.1
The only cases of H5N1 Avian Influenza have been in Asia and Europe.	The vast majority of AI strains only affect poultry or bird species.	Continue to follow vigorous biosecurity practices.

SCENARIO: A CASE OF H5N? HAS BEEN FOUND IN A DELMARVA FLOCK

STAKEHOLDER: PRODUCERS

QUESTION: HOW DO I PROTECT MYSELF AND MY FAMILY?

KEY MESSAGE 1 	KEY MESSAGE 2 	KEY MESSAGE 3
Risk of contracting Avian Influenza in this situation is very low.	We understand your concern and urge you to take protective measures.	The best protection is to prevent the introduction of AI to your farm.
		
Support Point 1.1	Support Point 2.1	Support Point 3.1
Aggressive actions are underway to control and eradicate this outbreak.	Information is available at _____.	Information on bio from _____
Support Point 1.2	Support Point 2.2	Support Point 3.2
Flock will be destroyed promptly.		
Support Point 1.3	Support Point 2.3	Support Point 3.3
We urge you to cooperate fully with animal health and public health authorities.		

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APPENDIX 4– MASS VACCINATION

The Centers for Disease Control and Prevention’s Advisory Committee on Immunization Practices (ACIP) met on July 29th, 2009 to make recommendations for use of vaccine against novel influenza A (H1N1).

The committee met to develop recommendations on who should receive vaccine against novel influenza A (H1N1) when it becomes available, and to determine which groups of the population should be prioritized if the vaccine is initially available in extremely limited quantities.

The committee recommended the vaccination efforts focus on five key populations. Vaccination efforts are designed to help reduce the impact and spread of novel H1N1. The key populations include those who are at higher risk of disease or complications, those who are likely to come in contact with novel H1N1, and those who could infect young infants. When vaccine is first available, the committee recommended that programs and providers try to vaccinate:

- pregnant women,
- people who live with or care for children younger than 6 months of age,
- health care and emergency medical services personnel,
- persons between the ages of 6 months through 24 years of age, and
- people from ages 25 through 64 years who are at higher risk for novel H1N1 because of chronic health disorders or compromised immune systems.

The groups listed above total approximately 159 million people in the United States.

The committee does not expect that there will be a shortage of novel H1N1 vaccine, but availability and demand can be unpredictable. There is some possibility that initially the vaccine will be available in limited quantities. In this setting, the committee recommended that the following groups receive the vaccine before others:

- pregnant women,
- people who live with or care for children younger than 6 months of age,
- health care and emergency medical services personnel with direct patient contact,
- children 6 months through 4 years of age, and
- children 5 through 18 years of age who have chronic medical conditions.

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The committee recognized the need to assess supply and demand issues at the local level. The committee further recommended that once the demand for vaccine for these prioritized groups has been met at the local level, programs and providers should begin vaccinating everyone from ages 25 through 64 years. Current studies indicate the risk for infection among persons age 65 or older is less than the risk for younger age groups. Therefore, as vaccine supply and demand for vaccine among younger age groups is being met, programs and providers should offer vaccination to people over the age of 65.

The committee also stressed that people over the age of 65 receive the seasonal vaccine as soon as it is available. Even if novel H1N1 vaccine is initially only available in limited quantities, supply and availability will continue, so the committee stressed that programs and providers continue to vaccinate unimmunized patients and not keep vaccine in reserve for later administration of the second dose.

The novel H1N1 vaccine is not intended to replace the seasonal flu vaccine. It is intended to be used alongside seasonal flu vaccine to protect people. Seasonal flu and novel H1N1 vaccines may be administered on the same day.

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APPENDIX 5– RESPONSE GUIDANCE

5-1. Antiviral Medication Priority Group Recommendations

	Group	Estimated population (millions)	Strategy	# Courses (millions)		Rationale
				For target group	Cumulative	
1	Patients admitted to hospital ***	10	T	7.5	7.5	Consistent with medical practice and ethics to treat those with serious illness who are most likely to die.
2	Health care workers (HCW) with direct patient contact and emergency medical (EMS) providers	9.2	T	2.4	9.9	Healthcare workers are required for quality medical care. There is little surge capacity among healthcare sector personnel to meet increased demand.
3	Highest risk outpatients— Immuno-compromised persons and pregnant women	2.5	T	0.7	10.6	Groups at greatest risk of hospitalization and death; Immunocompromised cannot be protected by vaccination.
4	Pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision-makers	3.3	T	0.9	11.5	Groups are critical for an effective public health response to a pandemic.
5	Increased risk outpatients— young children 12-23 months old, persons >65 yrs old, and persons with underlying medical conditions	85.5	T	2.0	35.9	Groups are at high risk for hospitalization and death.
6	Outbreak response in nursing homes and other residential settings	NA	PEP	2.0	35.9	Treatment of patients and prophylaxis of contacts is effective in stopping outbreaks; vaccination priorities do not include nursing home residents.

Replace numbers with those applicable to Maryland.

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7	HCWs in emergency departments, intensive care units, dialysis centers, and EMS providers	1.2	P	4.8	40.7	These groups are most critical to an effective healthcare response and have limited surge capacity. Prophylaxis will best prevent absenteeism.
8	Pandemic societal responders (e.g., critical infrastructure groups as defined in the vaccine priorities) and HCW without direct patient contact	10.2	T	2.7	43.4	Infrastructure groups that have impact on maintaining health, implementing a pandemic response, and maintaining societal functions
9	Other outpatients	180	T	47.3	90.7	Includes others who develop influenza and do not fall within the above groups.
10	Highest risk outpatients	2.5	P	10	100.7	Prevents illness in the highest risk groups for hospitalization and death.
11	Other HCWs with direct patient contact	8.0	P	32	132.7	Prevention would best reduce absenteeism and preserve optimal function.

*The committee focused its deliberations on the domestic U.S. civilian population. NVAC recognizes that Department of Defense (DoD) needs should be highly prioritized. A separate DoD antiviral stockpile has been established to meet those needs. Other groups also were not explicitly considered in deliberations on prioritization. These include American citizens living overseas, non-citizens in the U.S., and other groups providing national security services such as the border patrol and customs service.

**Strategy: Treatment (T) requires a total of 10 capsules and is defined as 1 course. Post-exposure prophylaxis (PEP) also requires a single course. Prophylaxis (P) is assumed to require 40 capsules (4 courses) though more may be needed if community outbreaks last for a longer period.

***There are no data on the effectiveness of treatment at hospitalization. If stockpiled antiviral drug supplies are very limited, the priority of this group could be reconsidered based on the epidemiology of the pandemic and any additional data on effectiveness in this population.

(Source: 1111S Pandemic Influenza Plan, Part 2-Public Health Guidance Supplements, Supplement 7)

Replace numbers with those applicable to Maryland.